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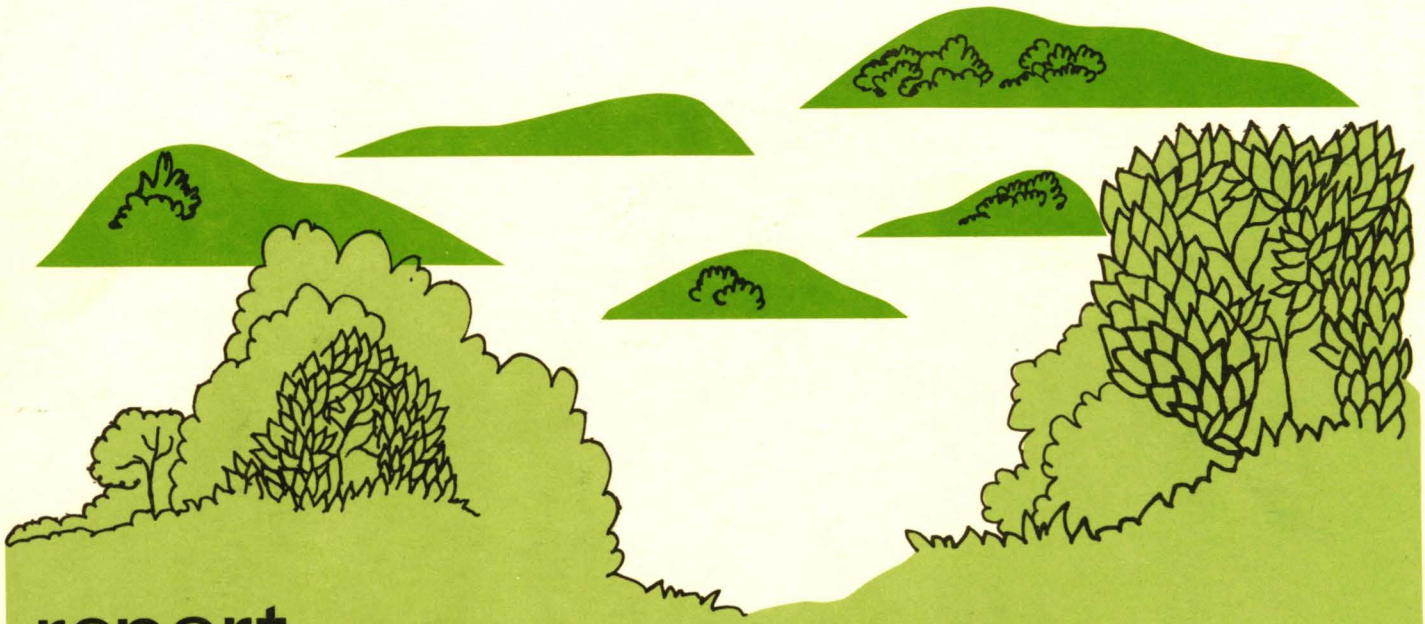

report
on a study of Federal Lands at CAMP GRUBER in Muskogee County, Oklahoma

U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE • SOUTHERN REGION

A study to determine the best future use of the Federal Lands at Camp Gruber, Oklahoma.

Muskogee County, Oklahoma

Landscape View

Responsible Official
Alvis Z. Owen
Forest Supervisor
Ouachita National Forest

Conducted By
U. S. Forest Service
Ouachita National Forest
P. O. Box 1270
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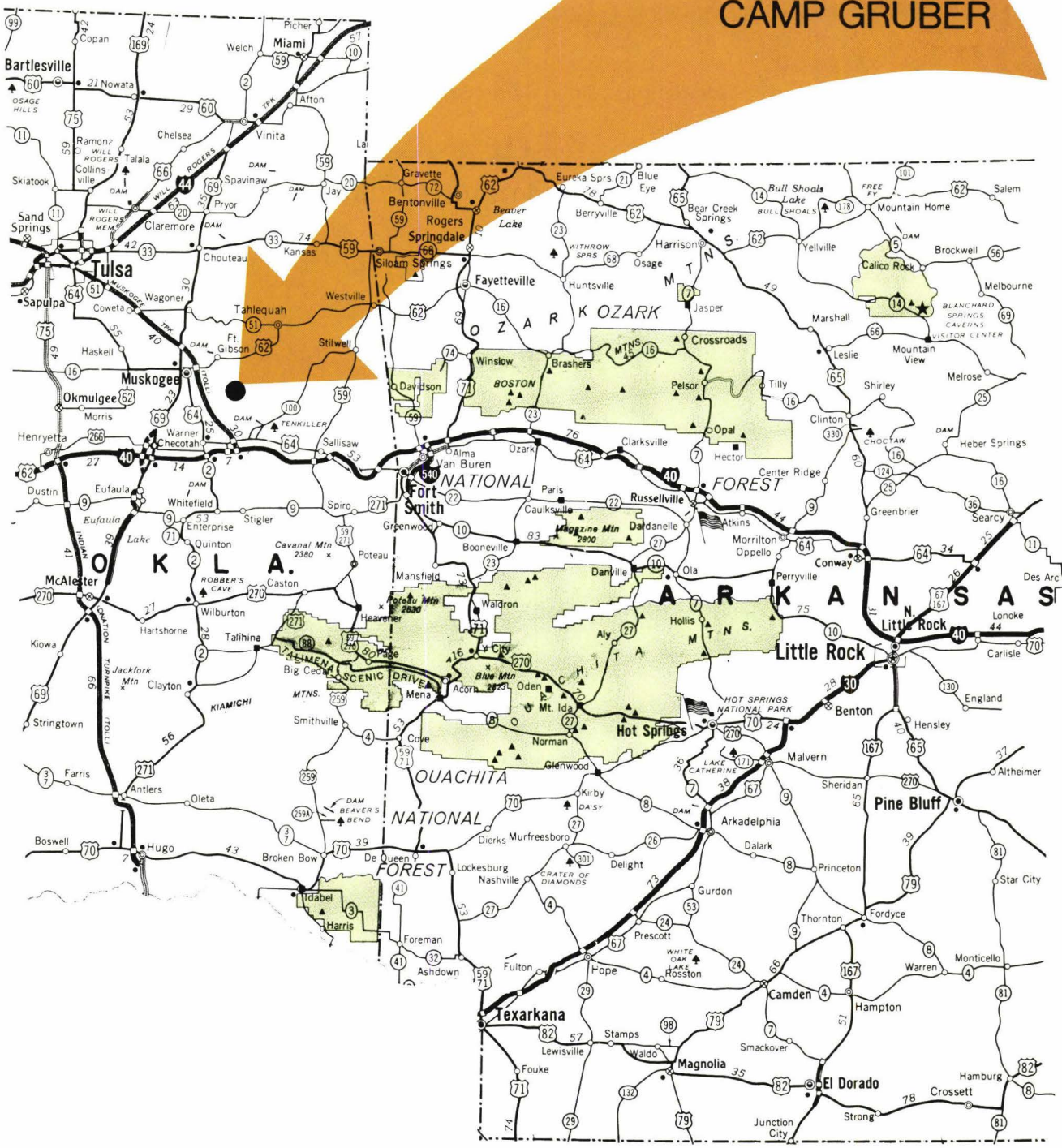
June, 1977

LOCATION - CAMP GRUBER



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I. INTRODUCTION

Why the Study?

This report describes a study made to determine the best future use of the lands presently held by the United States of America at Camp Gruber in Muskogee County, Oklahoma. There were two phases to the study — a technical procedure to determine the suitability of the lands for different uses, and the solicitation and presentation of various proposals for use from appropriate agencies, organizations and individuals.

The study was undertaken because the Forest Supervisor of the Ouachita National Forest did not have sufficient information to administer any lands returned to the Secretary of Agriculture. Administration of Land Utilization Projects have been assigned to the Forest Service by the Secretary. A brief history of the national Land Utilization Program appears in the Appendix.

Background of Federal Acquisition at Camp Gruber

The United States began acquiring lands, which later became Camp Gruber, in 1935 under authority of the National Industrial Recovery Act of June 16, 1933.[1] Other lands were acquired under the Emergency Relief Appropriations Act of April 8, 1935, and Title III of the Bankhead-Jones Farm Tenant Act of June 22, 1937.

During the acquisition period the lands were part of the Cookson Hills Land Utilization Project, administered by the Soil Conservation Service of the Department of Agriculture. With the approach and arrival of World War Two, President Franklin D. Roosevelt issued a series of Executive Orders which transferred jurisdiction of 28,122.47 acres of land in Muskogee County from the Secretary of Agriculture to the Secretary of War. Copies of these Executive Orders are in the Appendix.

1/ Introduction Section — 1940 Land Management Plan — Soil Conservation Service — 1940

One Executive Order, 9282, provided that the lands would be returned to the Secretary of Agriculture, for administration under Title III of the Bankhead-Jones Farm Tenant Act, when no longer needed for military purposes.

The transferred lands became Camp Gruber and a military acquisition program between 1940 and 1942 added more than 37,000 acres. Lands added included 5,581.78 acres intermingled among Cookson Hills Land Utilization Project lands in Muskogee County and a large consolidated block in adjoining Cherokee County. The lands in Cherokee County, except for 640 acres, were conveyed to the State of Oklahoma in a deed dated June 29, 1949. The deed reserved 640 acres for the Corps of Engineers' Tenkiller Ferry Reservoir project and stipulated that the property transferred to Oklahoma be used for wildlife conservation.

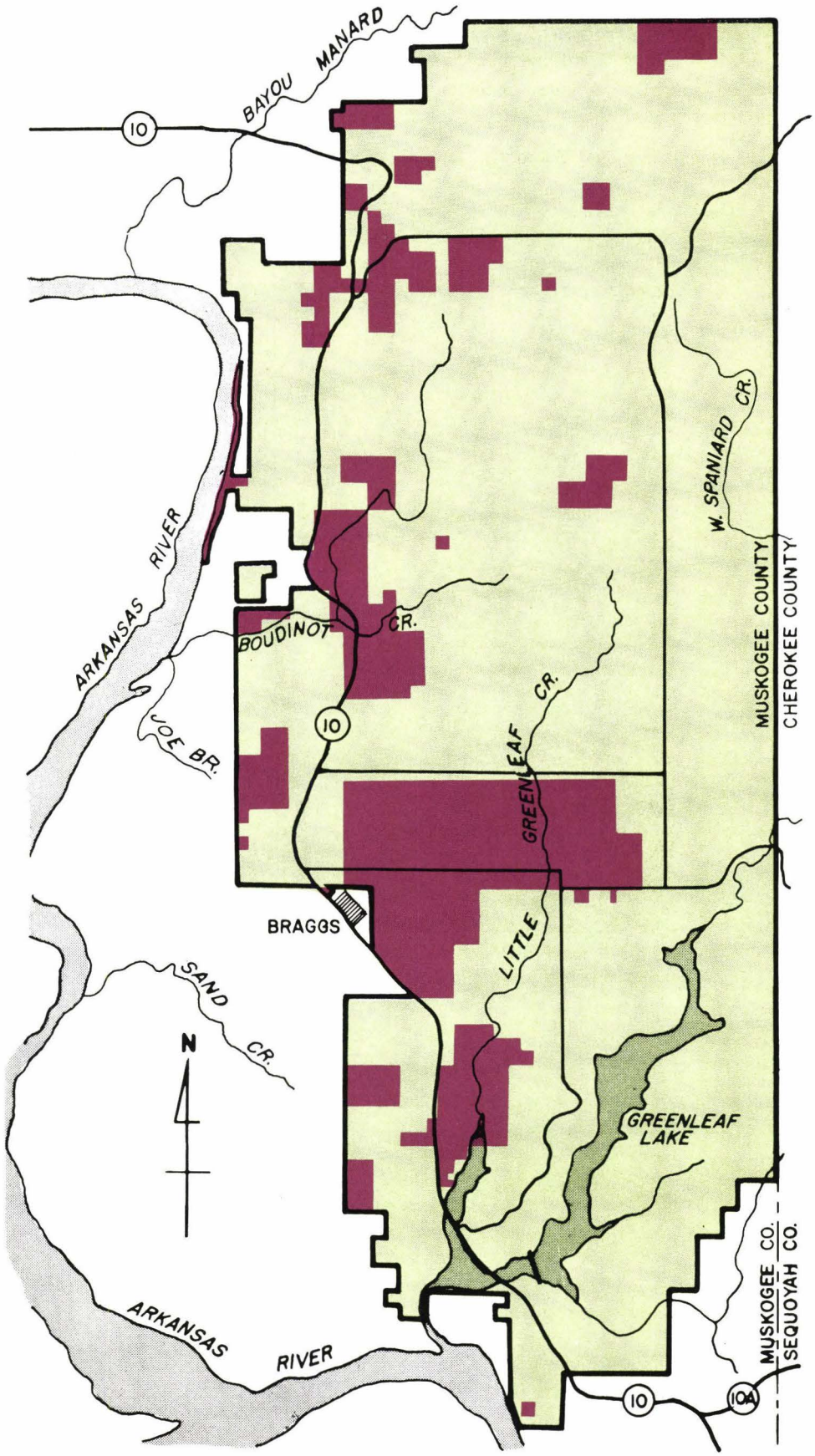
When Camp Gruber was deactivated in 1967, the U. S. Army still held all the lands previously acquired in Muskogee County. The acreage was reduced further on April 3, 1973, when 455.49 acres were conveyed to the State of Oklahoma with the stipulation that the land be used for public recreation.

The following lands are the subject of this report:
Title III lands — 28,122.47 acres
Military lands — 5,126.29 acres
Total — 33,248.76 acres

The United States also holds an easement interest in 10.01 acres not included with the military fee lands above. This easement gives a perpetual right to operate an outfall sewer line from Camp Gruber to the Arkansas River.

Boundary descriptions of the lands included in the study are in the Appendix.

STUDY AREA



Military Land
Title III Land

Present Use at Camp Gruber

Three State agencies and one individual are the primary users of Camp Gruber today under outgrants from the Department of the Army.

The Oklahoma National Guard has use of 26,075.36 acres for military training, the Oklahoma Department of Wildlife Conservation has use of 23,515.36 acres for a game management area, and the Oklahoma Tourism and Recreation Department has 1,326 acres on which it operates Greenleaf Lake State Park. Lynn Hubler has cattle grazing rights on 23,490 acres. Other authorized uses include rights-of-way for utilities and highways.

Unauthorized uses of the Camp Gruber lands include game poaching, vandalism and motorcycle riding.

Wildlife Food Plot

Oklahoma National Guard Equipment

II. EARLY HISTORY OF "THREE FORKS COUNTRY" AROUND CAMP GRUBER [2, 3]

A physical feature which played a key role in the early history of Oklahoma is less than five miles from the northwest corner of Camp Gruber. Here the Verdigris River and the Grand (Neosho) River join the Arkansas River, giving rise to the name "Three Forks."

The recently completed Arkansas River Navigation System opened Tulsa, Oklahoma, to barge traffic but, in many respects, this is nothing new. River navigation for the pursuit of trade with the Indians was the main reason white men came to Three Forks in the first place. Author Phil Harris described this in his book, THIS IS THREE FORKS COUNTRY.

The oldest and most important military establishment in Oklahoma once was located at Fort Gibson which is between Three Forks (now called Okay) and Camp Gruber, on the east bank of the Grand River. Historians Grant and Carolyn Foreman described the origin and role of Fort Gibson in their book, FORT GIBSON — A BRIEF HISTORY.

Fort Gibson was established in 1824 and remained an important post on through the Civil War. It was vacated as a military post in 1871 but its substantial buildings were found useful for many years. The old stockade has been restored and is open to the public and nearby is the only National Cemetery in Oklahoma, established in 1869 on land that was part of the original military reservation.

The town of Muskogee began to emerge as the hub of Three Forks country after the Civil War. Like many other Indian Territory towns, it was brought into being by the railroads. The Missouri, Kansas and Texas Railroad was built in 1872 and within two years had absorbed the river traffic into Fort Gibson. In 1870, that traffic consisted of the cargo transported by 20 steamships and it included all merchandise forward to the Creek and Seminole agencies, North Fork, Okmulgee, to trading posts throughout the interior of the Indian Territory and all government freight into Fort Gibson.

White men were intruders in Muskogee following the coming of the railroad until Congress passed the so-called Curtis Act in 1898 to legalize their presence and make it possible for them to own and pay for the town lots which they occupied. Until then, Muskogee and all other towns in the Creek Nation were without townsite government. The town of Muskogee was incorporated on March 19, 1898, under the laws of Arkansas. Its population in 1890 was 1,200 people.

Muskogee calls itself the Indian Capital of the World. The agencies of the Five Civilized Tribes (Cherokee, Chickasaw, Choctaw, Creek and Seminole) were consolidated into one Union Agency in Muskogee on July 1, 1874. The cornerstone was laid on August 18, 1875, in a Masonic ceremony at which William P. Ross, retiring chief to the Cherokee Nation and Creek Chief Samuel Checote spoke. The building serves today as the Five Civilized Tribes Museum.

The introduction section to a 1940 Land Management Plan for the Cookson Hills Project tells something of the conditions in the area at the inception of the project and also describes some of the results of the development program.

Land use at the beginning of the project was in three main categories — crop land, 14,940 acres; pasture land, 6,573 acres; and woodland, 9,849 acres. Social and economic conditions within and near the project area were at a very low level. In 1920, there were three cotton gins in Braggs and 6,300 bales of cotton were ginned. The same year 150 cars of potatoes were shipped from the town. In 1935, only one gin remained and its output was 150 bales of cotton. Just a few truckloads of potatoes were produced. Also, the railroad tie business had disappeared, after having once been the center of the largest tie market in the state. No other crop or crops had appeared to take the place of those that once were so productive.

A survey made just before the Cookson Hills Project started showed that on the project and on adjacent farms 76 percent of the people were on relief, that 135 owner-operators made a cash income of $45.00 a year, and that 535 tenants had a cash income each of only $39.00 a year. During the project, some farmers were relocated on better land, others were assisted in farm ownership or given grants and technical assistance in renting or buying land in new locations. About 90 percent of the land was tax delinquent.

The development program included erosion control and water conservation, establishing pastures, planting trees, organizing game sanctuaries and the building of Greenleaf Lake, which has 14.5 miles of shoreline covering 920 surface acres. Recreational facilities were built around the lake.

III. THE PEOPLE AROUND CAMP GRUBER

Eastern Oklahoma Development District

The study team had to look beyond Camp Gruber in its work. Past uses have often had more than just local impact and so will future uses. So, this report takes a look at the Eastern Oklahoma Development District Planning Area. Camp Gruber, at Braggs, is in the center of the area.

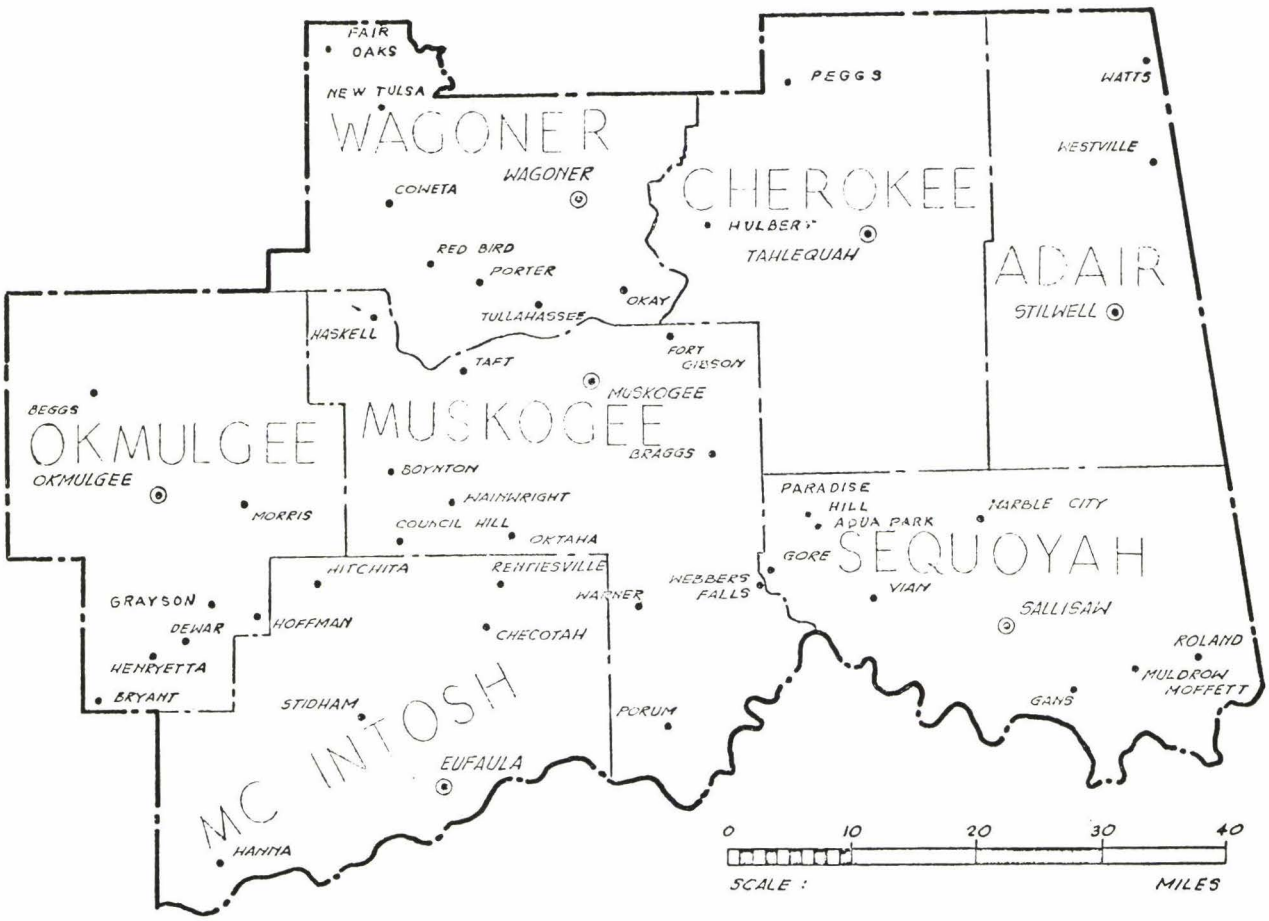
The Eastern Oklahoma Development District (EODD)

2 *This is Three Forks Country — Phil Harris — 1st Edition 1965*

3 *Fort Gibson — A Brief History — Grant and Carolyn Foreman*

is one of 11 substate planning districts and is headquartered in Muskogee.[4] It functions as a multi-jurisdictional comprehensive planning and development agency, representing local governmental bodies and citizens groups in the counties of Adair, Cherokee, McIntosh, Muskogee, Okmulgee, Sequoyah and Wagoner. It is concerned with furthering the economic, social and environmental welfare of the region. It furnished much valuable information for the study. The following map shows the political boundaries of EODD.[5]

COUNTIES AND INCORPORATED COMMUNITIES IN EODD



Population and Trends[4] [5]

Population changes in EODD generally have reflected national trends — out-migration from the rural areas and smaller cities, particularly by younger people, to large cities such as Tulsa and Oklahoma City and movement within the District of people from the farm to the city. Still, the District is, by all definitions, predominately rural.

Muskogee is the growth center of EODD, with a 1970 population of 37,331. No other communities in the 7 county area approach it in size and only 5 communities — Sallisaw, Henryetta, Okmulgee, Tahlequah and Wagoner — are near or over the 5,000 population mark.

The 1970 population by counties and incorporated communities in EODD is shown in table I. Projections by EODD are that the population will steadily rise over the next 30 years. Table II shows the projections, which are somewhat larger than those prepared by the Oklahoma Employment Security Commission.

The 1970 census also shows that 79.9 percent of the residents are white, 10.4 percent black, 9.5 percent Indian, and .2 others. Males make up 46.9 percent of the population and females 53.1 percent. Persons between 20 and 64 years of age make up 48.8 percent of the population, and those between 6 and 19 make up 27.7 percent. The under 6 years of age group accounts for 9.5 percent of the population, while the 65 and over group has 14 percent.

4/ *Base Studies Document — Eastern Oklahoma Development District — January, 1974*

5/ *Economic Development Element of the Comprehensive Plan — EODD — June, 1975*

TABLE I

COUNTIES AND COMMUNITIES IN EODD WITH 1970 U. S. CENSUS POPULATIONS

ADAIR COUNTY	15,141
Stilwell	2,134
Watts	326
Westville	934
All Other	11,747
CHEROKEE COUNTY	23,174
Hulbert	505
Tahlequah	9,254
All Other	13,415
MCINTOSH COUNTY	12,472
Checotah	3,074
Eufaula	2,355
Hanna	181
Hitchita	160
Rentiesville	96
Stidham	53
All Other	6,553
MUSKOGEE COUNTY	59,542
Boynton	522
Braggs	325
Council Hill	135
Fort Gibson	1,418
Haskell	2,063
Muskogee	37,331
Oktaha	193
Porum	658
Taft	525
Wainright	135
Warner	1,217
Webbers Falls	485
All Others	14,535
OKMULGEE COUNTY	35,358
Beggs	1,107
Dewar	933
Grayson	142
Henryetta	6,430
Hoffman	262
Morris	1,119
Okmulgee	15,180
All Other	10,185
SEQUOYAH COUNTY	23,370
Aqua Park	
Gans	238
Gore	478
Marble City	299
Moffett	312
Muldrow	1,680
Paradise Hill	87
Roland	827
Sallisaw	4,888
Vian	1,134
All Other	13,427
WAGONER COUNTY	22,163
Coweta	2,457
Fair Oaks	23
New Tulsa	17
Okay	419
Porter	624
Red Bird	230
Tullahassee	183
Wagoner	4,959
All Other	13,251
EODD TOTAL	191,220

TABLE II

EODD POPULATION PROJECTIONS, BY COUNTY AND COMMUNITY

	1970	1980	1990	2000
ADAIR COUNTY	15,141	16,940	23,240	24,138
Stilwell	2,134	3,460	5,738	6,138
Watts	326	461	933	1,000
Westville	934	1,347	2,793	3,000
Rural Adair	11,747	11,672	13,776	14,000
CHEROKEE COUNTY	23,174	30,235	32,000	32,972
Hulbert	505	592	897	940
Peggs	128	137	170	175
Tahlequah	9,254	16,226	17,969	18,920
Rural Cherokee	13,287	13,280	12,964	12,937

MCINTOSH COUNTY	12,472	13,370	16,500	16,963
Checotah	3,074	3,338	4,261	4,393
Eufaula	2,355	2,557	3,264	3,365
Hanna	181	196	249	257
Hitchita	160	174	223	230
Rentiesville	96	104	134	138
Stidham	53	58	75	77
Rural McIntosh	6,553	6,943	8,294	8,503
MUSKOGEE COUNTY	59,542	69,200	103,000	107,853
Boynton	522	618	952	1,000
Braggs	325	420	753	800
Council Hill	135	168	284	300
Ft. Gibson	1,418	2,154	4,732	5,100
Haskell	2,063	2,650	4,706	5,000
Muskogee	37,331	43,415	64,711	67,753
Oktaha	193	254	469	500
Porum	658	786	1,236	1,300
Taft	525	660	1,133	1,200
Wainright	135	168	284	300
Warner	1,217	1,794	3,812	4,100
Webbers Falls	485	688	1,399	1,500
Rural Muskogee	14,535	15,425	18,529	19,000
OKMULGEE COUNTY	35,358	38,350	48,840	50,338
Beggs	1,107	1,286	1,911	2,000
Bryant	86	99	144	150
Dewar	933	1,066	1,533	1,600
Grayson	142	164	239	250
Henryetta	6,430	7,064	9,283	9,600
Hoffman	262	290	386	400
Morris	1,119	1,275	1,822	1,900
Okmulgee	15,180	16,632	21,712	22,438
Rural Okmulgee	10,099	10,474	11,810	12,000
SEQUOYAH COUNTY	23,370	30,540	55,660	59,244
Gans	238	450	1,194	1,300
Gore	478	862	2,208	2,400
Marble City	299	479	1,110	1,200
Moffett	312	610	1,651	1,800
Muldrow	1,680	2,644	6,018	6,500
Paradise Hill	87	130	279	300
Roland	827	1,362	3,233	3,500
Sallisaw	4,888	7,559	16,908	18,244
Vian	1,134	1,907	4,613	5,000
Rural Sequoyah	13,427	14,537	18,446	19,000
WAGONER COUNTY	22,163	35,670	82,980	89,686
Coweta	2,457	5,766	17,346	19,000
Fair Oaks	23	118	452	500
New Tulsa	17	114	452	500
Okay	419	1,135	3,642	4,000
Porter	624	1,599	5,012	5,500
Red Bird	230	584	1,823	2,000
Tullahassee	183	446	1,368	1,500
Wagoner	4,959	11,504	34,413	37,686
Rural Wagoner	13,251	14,404	18,472	19,000
EODD TOTAL	191,220	229,200	362,220	381,194

Economic Conditions[5]

Table III shows industrial employment in EODD between 1950-1970.

Although Muskogee is the growth center of EODD, the cities of Tulsa, Oklahoma, and Ft. Smith, Arkansas, exert strong economic influence on the District. Both are just outside the District on the Arkansas River Navigation System.

The influence of Tulsa and Ft. Smith is shown in the fact that only three of every four of the District's workers have jobs in the same county as their place of residence. The statewide average for commuting is 11.3 percent but the figure for Wagoner County, adjacent to Tulsa, is 58.3 percent and for Sequoyah County, next to Ft. Smith, is 42.9 percent. The EODD figure is 22.5 percent.

Projections are that by 1990 manufacturing will account for 40 percent of total employment in EODD and by the year 2,000 manufacturing jobs should total 190,000.

Much of the economic future of the District hinges on the success of the Arkansas River Navigation System. Industrial port and industrial park sites have been identified for development by public and private investment. The navigation system also is expected to bring a large increase in water-based recreation and tourism.

The 1970 economic statistics for EODD show the average per capita income ranging from $1,229 in Adair County to $2,958 in Muskogee County. The EODD average was $2,135 while the national average per capita income was $3,466, and that of Tulsa, $3,365. About one-fourth of the families in EODD were living with incomes below the poverty level.

Educational attainment seems related to economic attainment. In 1970, 38.7 percent of the persons 25 years of age or older in EODD were high school graduates while the national average was 54 percent. Only 6.5 percent of those same people in EODD had college degrees compared to the national average of 10.7 percent.

TABLE III

DISTRICT EMPLOYMENT BY MAJOR INDUSTRY, 1950, 1960, 1970

	Employment		
Major Industry	1950	1960	1970
Agriculture-Mining	17,611	6,544	3,902
Construction	4,127	3,854	5,829
Manufacturing	6,671	8,237	11,405
Transportation-Utilities	3,667	3,137	3,456
Wholesale Trade	1,522	1,270	1,920
Retail Trade	8,521	8,779	10,831
Finance, Insurance, Real Estate	1,148	1,368	1,767
Services	10,820	11,783	17,132
Government	2,348	2,479	2,837
TOTAL	56,435	47,451	59,079
Total Population	198,384	175,730	191,220

Landownership Patterns and Uses[6]

In 1975, 88.7 percent of the total land acreage in EODD was devoted to cropland, pasture or woodland. The percentage of each varied from county to county but cropland's overall share was 15.3 percent, pasture's share 38.7 percent and woodland's share 34.7 percent. Table IV gives a breakdown by counties.

Publicly owned land in EODD totals 446,554 acres or 14.8 percent of the total land area. Lands in public ownership vary from 15,582 acres (4.2 percent) in Adair County to 141,678 acres (36.4 percent) in McIntosh County.

Most of the publicly owned land is administered by the Corps of Engineers in connection with the Arkansas River Navigation System, which was opened along its entire length in December of 1970. Parks and wildlife management areas administered by the State of Oklahoma constitute the other major public use. Table V shows the public use areas in EODD.

5 *Economic Development Element of the Comprehensive Plan — EODD — June, 1975*

6 *A Report on Land Use and Future Land Use Requirements for the EODD — June 30, 1976*

It is estimated that urban and developed land acreage in EODD will increase from 116,497 acres in 1970 to 143,673 acres in the year 2,000. The trend of increase in urban and developed acres usually follows the same pattern as the increase in population.

Although the number of acres that will be needed for cities, towns, industrial sites, airports, etc., is small compared to the total land area in EODD, urban development can have a significant effect on the natural environment if not handled in an orderly manner.

A table showing the land use needs for Muskogee County alone is included in the Appendix.

TABLE IV

AGRICULTURE AND WOODLAND
EASTERN OKLAHOMA DEVELOPMENT DISTRICT
1975

	ADAIR	CHEROKEE	MCINTOSH	MUSKOGEE	OKMULGEE	SEQUOYAH	WAGONER	EODD TOTALS	PERCENT
Total Acres	364,800	483,840	389,120	523,520	448,000	445,440	360,320	3,015,040	100.0
Cropland	38,830	20,054	62,836	116,000	87,728	27,255	110,000	462,703	15.3
Pasture	66,532	133,395	171,354	285,450	206,990	157,320	146,800	1,167,841	38.7
Forest	208,204	287,962	121,210	75,000	102,885	218,100	32,000	1,045,361	34.7
Total	313,566	441,411	355,400	476,450	397,603	402,675	288,800	2,675,905	88.7
Percent of County	86.0	91.2	91.3	90.8	88.8	94.4	80.1		
Balance	51,234	42,429	33,700	47,070	50,397	42,765	71,520	339,135	11.3
Percent of County	14.0	8.8	8.7	9.2	11.2	5.6	19.9		

Source: Annual Reports to the Oklahoma Conservation Commission 1975

TABLE V

PUBLIC USE AREAS
EASTERN OKLAHOMA DEVELOPMENT DISTRICT
MAJOR HOLDINGS
BY COUNTY

FACILITY	ADAIR	CHEROKEE	MCINTOSH	MUSKOGEE	OKMULGEE	SEQUOYAH	WAGONER	TOTAL
Ft. Gibson Reservoir	—	13,419	—	—	—	—	39,177	52,596
Tenkiller Reservoir	—	24,149	—	—	—	—	6,372	30,521
Eufaula Reservoir	—	—	129,233	128	3,934	—	—	133,295
Camp Gruber	—	31,305	—	3,231.9[1]	—	—	—	63,624
Greenleaf State Park	—	—	—	455[2]	—	—	—	455
Cookson Hills	5,890	7,750	—	—	—	—	—	13,640
Okmulgee Game Management	—	—	—	—	7,719	—	—	7,719
Okmulgee Lake Recreation Area	—	—	—	—	531[3]	—	—	531
Newt Graham Lock and Dam	—	—	—	—	—	—	1,091	1,091
Chouteau Lock and Dam	—	—	—	—	—	—	7,185	7,185
Webbers Falls Lock and Dam	—	357	—	14,700	—	—	1,147	16,204
Robert S. Kerr Lock and Dam	—	—	—	6,626	—	21,217	—	27,843
W. D. Mayo Lock and Dam	—	—	—	·	·	957	—	957
Lock and Dam 13 (Okla Portion)	—	—	—	·	·	1,518	—	1,518
Totals	5,890	76,980	129,233	54,228	12,184	23,692	54,972	357,179

[1]Excluding Greenleaf Lake (920 ac.)
[2]Includes only that portion deeded to the State in 1973 with the remainder in Camp Gruber acreage
[3]Excludes Lake (647 ac.)

Status of Local Governments [7] [8]

Camp Gruber is located across the Arkansas River from Muskogee and is within Muskogee County so it is often affected more by these two local governmental units than any others in EODD. The town of Braggs is adjacent to Camp Gruber and also is concerned with activities there.

The county governmental body is composed of three commissioners who are elected for a term of four years. Each of the incorporated communities in Muskogee County has a Mayor or Town Chairman who serves a term of four years.

A table showing the ad valorem tax schedules for Muskogee County during 1976 is included in the Appendix, expressed as dollars per $1,000 worth of assessed property value.

The procedure currently used for assessing property subject to taxation in Muskogee County is to assign values on the basis of —
— 20-25 percent of purchase price for older homes.
— $2.00-$2.70 per square foot for new brick homes.
— $1.50-$2.10 per square foot for new frame homes.
— Approx. $40.00 per acre for cropland, woodland, pastureland and other undeveloped property.

The last major revaluation took place between 1968-1972 but the Assessor constantly revalues property on a case-by-case basis. The total property assessment in Muskogee County has increased from $87 million in 1972 to $101 million in 1976. These are gross figures and include public service (utility) assessments, personal property and real estate before deducting homestead exemptions, and other categories of property.

Public education got almost one-half of the revenue generated from the 1976 ad valorem tax schedule in Muskogee County. The City of Muskogee's 1976 balance sheets indicate that its financial condition is good.

IV. THE PHYSICAL RESOURCES AT CAMP GRUBER AND SURROUNDING AREA

Topography

Camp Gruber lies between the Arkansas River on the west and the Illinois River on the east. The land slopes from the northwest and southeast corners at an elevation near 1,000 feet to Greenleaf Creek which bisects the Camp from northeast to southwest at elevations of 500 to 700 feet. The land is mostly rolling with numerous stream beds, ridges and knolls, although the west-central portion near Braggs is relatively flat. A dam on Greenleaf Creek creates a 920 acre recreational lake, covering about four miles of the Greenleaf valley with water.

The camp has two prominent topographical features — a cliff that runs for about two miles along the Arkansas River, and the abrupt increase of 300 to 500 feet in elevation along the Bayou Manard valley on the north. Farmlands lie at the northwest and southwest corners next to the Arkansas River.

A topography table is included in the Appendix.

7/ *Office of the County Clerk — Muskogee County — October, 1976*
8/ *Office of the Assessor — Muskogee County — October, 1976*

Arkansas River

SOILS

The soil resource inventory was made in cooperation with the Soil Conservation Service, which is currently engaged in making a detailed soil survey of Muskogee County. The SCS assisted in setting up soil mapping units, in classification of soils and in developing interpretations.

Included in the Appendix are a soil map and charts showing the suitability or limitations of the various soils mapping units for uses that affect Camp Gruber planning.

Land areas result from specific combinations of soils, geology, land shape and climate. The nature, pattern and extent of the soils and geologic formation give each unit a unique natural landscape and management situation of its own. The study area consists mainly of broad, rolling ridgetops on sandstone and shale plateaus that are deeply dissected. Valleys are narrow and steep sided. In the southwestern part of the study area there is a high terrace of the Arkansas River. Soils have a dry or droughty moisture regime and 44 percent have a severe erosion potential.

The inventory was made by steroscopic study of aerial photography, examination of soils and landscapes in the field, and the delineation of soil mapping units on aerial photographs. Each mapping unit has definite characteristics and properties, permitting grouping of mapping units according to their limitations or suitabilities for different uses. Interpretations were made from experience of soil behavior under similar management situations and predicted response of soils in relation to specific design criteria used and published by regulatory agencies. Ratings are based on the assumption that common practices are used to overcome soil limitations and reflect the probability of soil problems persisting after such practices are used. A rating of low, poor or severe for a particular use does not mean that the use cannot be accomplished but means that additional design and costs will be needed to overcome the limitations.

Here is a description of the soil mapping units shown on the soil map. Some other units were delineated but because they are small are treated as inclusions and not listed here.

0. Deep, moderately well drained, slowly permeable upland soils. Slopes range from 0 to 10 percent in gradient. Very dark brown loam surface layer about 12 inches thick. The upper subsoil to a depth of 24 inches is yellowish-brown silt loam mottled with red and grey. The lower subsoil is silty clay loam or silty clay mottled with red, yellow and grey. The underlying material is sandstone or shale. Included in this unit are small areas of shallow, loamy soils on ridgetops and soils with very stony surfaces.

1. Shallow, very slowly permeable, clay soils over limestone at a depth of less than 20 inches. Slopes range from 0 to 15 percent. The soils are dark very dark brown silty or clay, less than 20 inches in thickness. Limestone rock outcrop 20 to 30 percent on most areas. Included are small areas of a moderately deep, silty clay loam soil and areas with up to 60 percent limestone rock outcrops.

2. Deep, moderately well drained, slowly permeable upland soils. Slopes range from 0 to 15 percent. Dark greyish brown sandy loam surface layer about 12 inches thick contains flat sandstone fragments in the lower portion. Subsoil is yellowish brown clay or silty clay mottled with red, yellow and grey, and contains 25 percent shale fragments. Depth to shale ranges from 25 to 40 inches. Included in the unit are small areas of shallow, stony soils on ridgetops and areas of steeper slopes.

3. Deep, moderately well drained soils on nearly level flood plains. Very dark greyish-brown silt loam surface layer about 15 inches thick. Subsoil is dark greyish-brown silt loam or loam. A layer containing small gravels occurs at a depth of 30 inches in places. Included are small areas of somewhat poorly drained soils and loamy soils on stream terraces.

4. Deep, somewhat poorly and poorly drained clayey soils on upland or terrace flats with very slow permeability. Slopes range from 0 to 2 percent. Dark greyish-brown silt loam surface layers about 12 inches thick. Subsoil is greyish-brown clay mottled with olive brown, yellowish brown and grey over five feet thick. Some areas have a high sodium content. Included are small areas of a soil with silty clay loam upper subsoil and clayey lower portion.

5. Shallow well drained, rapidly permeable soil and a moderately deep, well drained moderately permeable soil on uplands. Slopes range from 0 to 15 percent. About 60 percent is shallow soil and 40 percent moderately deep soil. The moderately deep soil has a dark greyish-brown fine sandy loam surface layer and a yellowish-brown sandy clay loam subsoil. Depth to sandstone bedrock ranges from 25 to 40 inches. Shallow soil has brown fine sand loam surface layer about 6 inches thick. Subsoil is strong brown fine sandy loam about 9 inches thick overlying sandstone bedrock. Included are small areas of clayey soils, areas of sandstone outcrops and stony areas.

6. Deep, moderately well drained clay soils on uplands with slow permeability. Slopes range from 0 to 15

percent with a dark-greyish brown silt loam surface layer about 10 inches in thickness. Subsoil is yellowing brown clay mottled with greyish-brown and brownish-yellow. Depth to bedrock is more than 60 inches. Included are small areas of flood plains, sandy clay loam soil at bottom of steep slopes, and silty clay loam soils on nearly level ridgetops.

7. Deep, somewhat excessively drained, rapidly permeable soils on nearly level uplands and deep, well drained, moderately permeable soils on moderately steep slopes. Slopes range from 0 to 10 percent. Soil on nearly level areas has greyish-brown fine sand surface layers about 25 inches thick, and stony brown loam, fine sand subsoil. Soil on the sloping areas has brown loamy fine sand surface layer and a yellowish-red sandy clay loam subsoil. Depth to bedrock is more than 60 inches. Included are small areas of soils on steeper slopes and clayey soils.

8. Moderately deep, moderately well drained soils on uplands with slow permeability. Slopes range from 0 to 10 percent. Surface layer is yellowish-brown silt loam about 6 inches thick. Subsoil is strong brown silty clay mottled with red and grey. Depth to shale is about 40 to 50 inches. Included are small areas of poorly drained clayey soils and areas on steeper slopes.

9. Shallow, well drained, rapidly permeable sandy soils on upper portion; moderately deep, well drained moderately permeable medium textured soils in middle portion; a deep well drained, very slowly permeable clayey soil on lower portion. Unit occurs on sideslopes which range from 5 to 60 percent in gradient. All soils are stony. Included are areas of sandstone outcrop in middle of unit and clayey soils on upper portion of unit.

Geology

The study area is on the southwest flank of the Ozark uplift and the western edge of the Boston Mountain land resource area. The Cherokee Prairie lies just west across the Arkansas River; the Ouachita Mountains are to the south and Ozark Highlands to the north. It differs from the Ouachita Mountains in that ridges and valleys are underlain by only slightly folded to level bedded sedimentary rocks whereas the Ouachita Mountains consist of steeply inclined folds of sedimentary rocks broken by thrust faults.

The primary subsurface structure in the study area is about 10,000 feet of mostly Paleozoic sediments overlying the Precambrian Spavinaw Granite. Outcropping rocks are of sedimentary origin, range in age from Mississippian to Early Pennsylvanian, and consist mainly of limestones, shales, and sandstones. The surface is principally ironstained, massive to cross-bedded sandstones with scattered shales and occasional limestone units. The major rock units from the lowermost stratigraphic unit to the uppermost are the Pitkin Formation, Bloyd Formation, Hale Formation and the Atoka Formation. The primary geological unit covering the area is the Atoka Formation. The second major geological unit is Quaternary alluvium which occurs in only limited locations, generally in flood plains and low terraces along creeks. However, it does occur as a high terrace and covers a substantial portion of land just north of Braggs and the southwest portion west of Highway 10. The other geological formations occur primarily along Greenleaf Reservoir and in the valley along the northern portion of study area.

Structurally the area is characterized by deeply dissected sandstone and shale plateaus. Ridgetops of these plateaus are broad and rolling, valleys narrow and steepsided. One of the geological features is the cliff on the western edge immediately adjacent to the Arkansas River. Elevations range from 1,082 feet above sea level in the northern portion to about 500 feet in the southern portion along the Arkansas River.

Foundation conditions within the Atoka Formation are suitable for heavy duty construction. It has a bearing capacity which ranges from approximately 20,000 pounds per square foot in the less well-consolidated portions to 50,000 pounds per square foot where there is grey shale and limestone. Foundations built within the alluvial soils of the Quaternary Unit could depend upon a bearing capacity of approximately 2,000 pounds per square foot for loose and unconfined sand or gravel to 5,000 pounds per square foot for dense and confined sand or gravel.

Sandstone from the Atoka Formation has a specific gravity which ranges from 2.2 to 2.6. About 80 percent of it has the lower densities. The unit weight of the consolidated material will vary from 130 to 160 pounds per cubic foot. Volumetric change due to moisture absorption is negligible. There is no plasticity indicated. The shale within the Atoka Unit has a specific gravity of 1.9 to 1.95 and will weigh approximately 110 pounds per cubic foot. The shale, when broken down and with optimum moisture, will register a plastic index up to 10 but indicates little or no volumetric increase due to moisture variation. The shale is stable, but disintegrates when exposed to surface elements.

The quantitative observations are based upon the analysis of materials from similar formations but not from this specific site. Prior to any construction planning, it would be necessary to determine the exact depth of the formation at the proposed building site and the

characteristics of the foundation materials. Drilling should be done on a grid pattern and the laboratory testing should be for soil classification, strength determination and settlement properties of the clay soils. Good and poor construction areas can be identified this way.

Because of the relatively level position of the three components of the Atoka Formation, there appears to be little danger of landsliding. For example, along State Highway 10, which runs through Braggs Mountain on the north side of the reservation, there is a roadway cut some 20 to 30 feet in depth that has a near vertical face. Although this cut has been exposed for approximately 40 years, there has been no noticeable evidence of sliding or even substantial surface deterioration where the rock faces are exposed.

Northeastern Oklahoma is traversed by many large northeast-southwest trending faults and folds. Some of these have displacements as much as 700 feet. There is also a system of smaller faults southwest and west of Camp Gruber with displacements of about 25 feet. The major fault known within the Camp Gruber boundaries is the Greenleaf Lake fault, which parallels Greenleaf Creek through the eastern half of the Camp and has a stratigraphic displacement of 40 to 175 feet.

The faulting is believed to have been associated with the formation of the Ouachita Mountains. Younger rocks cover these faults in places and have remained undisturbed, thus the faults can be considered very old and essentially inactive.

The Camp Gruber area lies within a seismic risk zone 1, or zone in which minor damage has occurred from earthquakes. These seismic risk zones are supposed to be an indication of the maximum expected events. Frequency of occurrence of earthquakes is not taken into account. The zones are assigned a value from 0 to 3 in order of increasing seismic risk.

The New Madrid, Missouri, area has experienced earthquakes that have been felt every year since 1812. If a catastrophic earthquake were to occur in the New Madrid area, because of the distance involved it would be unlikely to damage any structure in Oklahoma unless the structure was very poorly built or was large enough to have a free vibration mode period of one second or greater.

The El Reno area is the only area in Oklahoma showing an historical concentration of earthquakes. There may be some small chance of damage to structures in the El Reno-Nemaha Ridge area, and an even smaller chance elsewhere in Oklahoma.

The study area then, can be considered relatively safe from future earthquake damage.

Minerals

Oil and gas are among the top ranking economic resources of Oklahoma, with most production being west and south of Camp Gruber. Cherokee County has no producing fields. Muskogee County, with a considerable number of oil and gas fields in the central and western part, had only one small field in the eastern part.

Muskogee and Cherokee Counties are outside the area that contains surface and shallow oil-impregnated rocks and shallow oil fields. There are two known occurrences of oil seepage in northeast Cherokee County, on the opposite side of the county from Camp Gruber. Neither county is considered to have reserves of heavy oil.

Coal is an important resource in northeastern Oklahoma but Cherokee County and northeastern Muskogee County are both outside the Interior Coal Province, so it is not likely that any significant coal reserves exist.

Other economic resources such as clay, glass sand, building stone, or sand and gravel may be present but are at this time unknown. Metal ores have not been found in the immediate area.

The Camp Gruber area is not a designated geothermal resource area and is not known to contain prospects for geothermal energy. In general, based on available information, the Camp Gruber area is not expected to contain commercial accumulations of gas or oil, deposits of coal, or metal ores, but may contain minor quantities of building stone, sand and gravel.

General Climatic Conditions

The Camp Gruber region climate can be classified as continental, characterized by rapid changes in temperature. Winters generally are mild with the temperature seldom going below zero. Summer temperatures can climb to 100 degrees Fahrenheit or higher but are usually accompanied by a southerly breeze and low humidity. Fall and spring bring sunny days and cool nights. Detailed climatological data for Muskogee, Tulsa and Fort Gibson are included in the Appendix. Some of the data for Tulsa is used to define the general climatic conditions in the Camp Gruber area because the topographical change between Tulsa and the Muskogee area is minimal.

Temperatures in the Camp Gruber area range from a mean of 39.3 degrees F. in January to 82.3 degrees F. in August. The highest recorded temperature was 118 degrees and the lowest 11 below zero. Above 90 degree weather can be expected 86 days of the year and below freezing on 71 days.

Heaviest precipitation comes from April through June. There have been no droughts in recent years.

Access

Oklahoma Highway 10, a two-lane all weather paved highway, passes through Camp Gruber and connects with the four-lane Muskogee Turnpike for northwest and southbound travel. The Highway 10 crossing on the Arkansas River has a pair of modern two-lane bridges with a four-lane connection to Muskogee and the Muskogee Turnpike and a short four-lane section on the east side of the River. The Muskogee Turnpike connects at the south end to Interstate 40 between Oklahoma City and Little Rock, Arkansas. The north end at Tulsa connects to Interstate 44 stretching from Oklahoma City and Kansas City.

There are approximately 40 miles of graded roads and undetermined numbers of miles of primitive roads in Camp Gruber. Some graded roads are in excellent shape, while others have little or no surfacing and can be used only by four-wheel drive vehicles when wet. Surfaced roads in the cantonment area are in poor condition. Many have little future use.

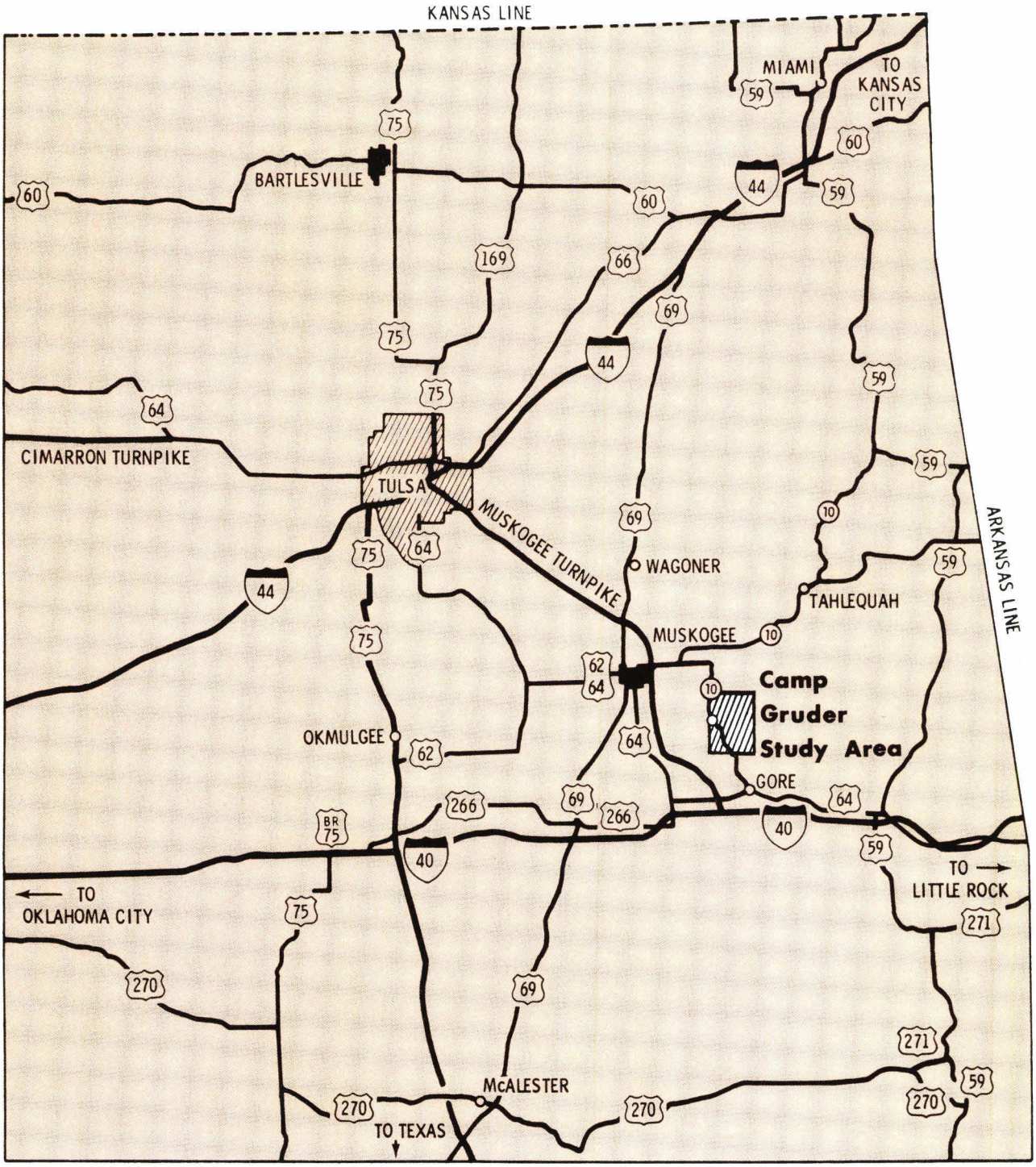
A Missouri-Pacific Railroad line crosses the southern part of Camp Gruber, providing direct connections to other main lines at Muskogee, Tulsa and Little Rock. Elevation changes and terrain at Camp Gruber are uniform enough that spur rail lines could be built to most locations in the Camp at reasonable costs.

Camp Gruber is served by two local airfields at Muskogee and an international airfield at Tulsa. Hatbox Field in Muskogee has a 3,800 foot asphalt runway and is used primarily by small private aircraft. Davis Field, 5 miles south of Muskogee, is a former military training field with a 7,200 foot concrete runway. It can handle the smaller commercial jet airplanes. Tulsa International Airport, with 10,000 foot runways, provides full commercial jet passenger and freight service to all major airports in the world.

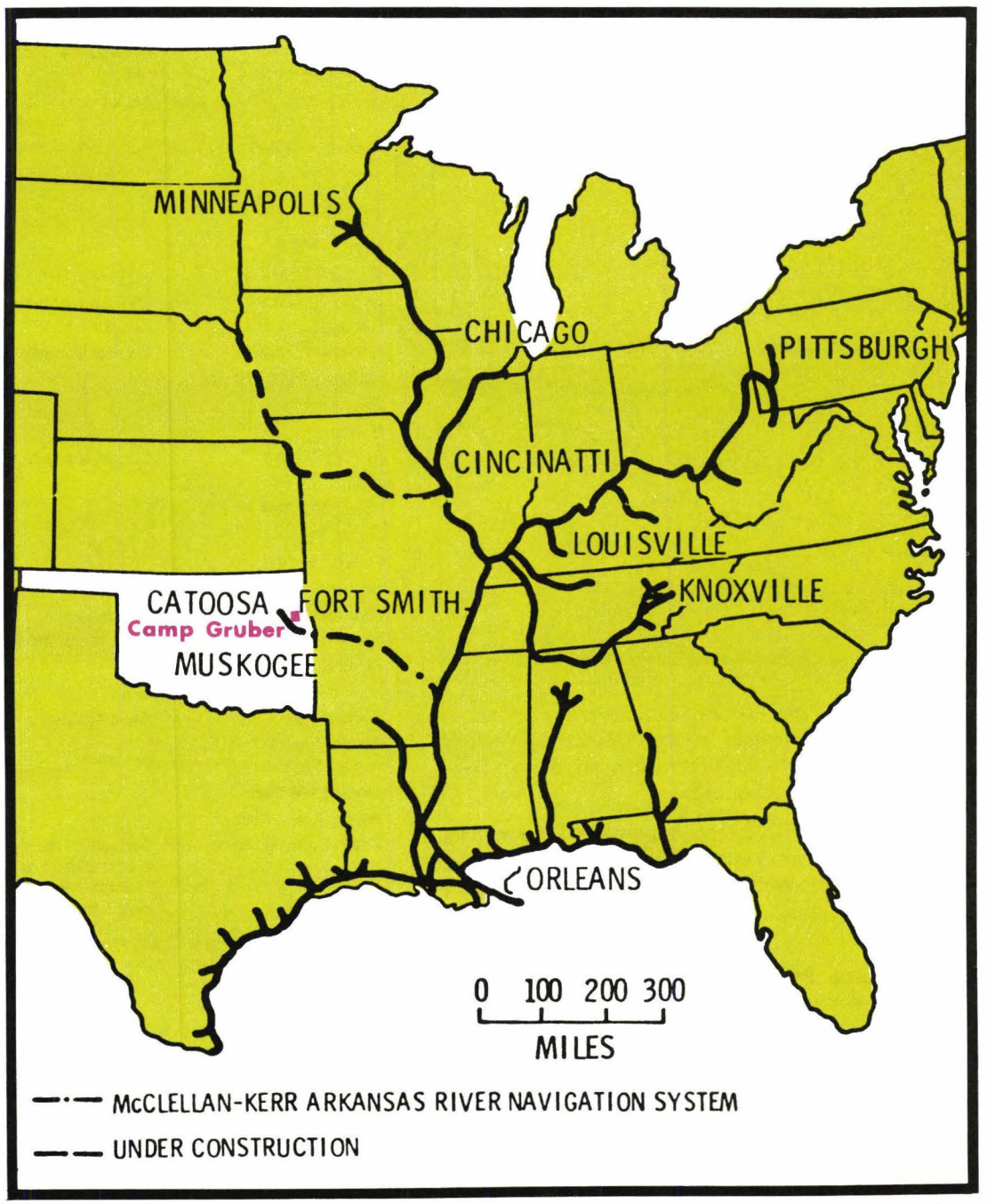
The Arkansas River adjacent to Camp Gruber is part of the McClellan-Kerr Arkansas River Navigation System which connects the Port of Catoosa at Tulsa to the Mississippi River and the interconnected inland waterway systems of the central United States. This provides access to many of the important industrial centers throughout the Mississippi River System, plus the eastern seacoast cities, via the Intracoastal Waterway. The McClellan-Kerr Arkansas River Navigation System has a minimum channel depth of 9 feet and a minimum channel width of 250 feet on the Arkansas River. All lock chambers are 110 feet wide and 600 feet long. The Port of Muskogee has docks served by crawler cranes. In addition, a barge slip has been built on the east bank of the river west of Braggs. To the south near Gore, the Kerr-McGee Corporation operated a barge dock connected by a railroad spur to the Missouri-Pacific Railroad that passes through the Camp.

Missouri-Pacific Railroad

EASTERN OKLAHOMA
PRINCIPAL HIGHWAYS



INTERCONNECTED INLAND WATERWAY SYSTEM



Recreation

EODD Open Space Comprehensive Plan[9] — The EODD Open Space Comprehensive Plan prepared in 1973 describes the recreation needs for Muskogee County and surrounding counties. The Plan relies on the Oklahoma Statewide Comprehensive Outdoor Recreation Plan (SCORP) for its basic data.

The SCORP allocates existing open space among four major classifications. They, and the current deficincies in each category, are shown in the following table:

Open Space Classification	Required Acres*	Existing Acres	Acreage Deficiency
Neighborhood Parks, Recreation Areas	382	143	239
Community Parks, Recreation Areas	956	202	754
Regional Parks, Recreation Areas	2,868	9,415	—
Natural Areas, Monuments, Memorials, Museums, Greenbelts, Parkways, etc.	8,931	143,670	—

*Calculated on basis of 2 acres per 1,000 persons for neighborhood parks, 5 acres per 1,000 persons for community parks, 15 acres per 1,000 persons for regional parks, and 42 acres per 1,000 persons for all other open space.

Projected open space requirements for 1973-2000 follow:

Open Space Classification	Current Deficit	Population Growth Requirements*	Projected Requirements 1973-2000
Neighborhood Parks, Recreation Areas	239	380	619
Community Parks, Recreation Areas	754	950	1,704
Regional Parks, Recreation Areas	—	—	—
Natural Areas, Monuments, Memorials, Museums, Greenbelts Parkways, etc.	—	—	—

*Based on a projected population increase of 189,974 persons by the year 2000.

As just indicated, the deficiencies and projected future open space requirements in the District are mostly in neighborhood parks and recreation areas and community parks and recreation areas.

Approximately 60 neighborhood parks and community parks throughout the District are planned for acquisition and/or development. Improvements are planned for at least one regional park. Several historic sites will be restored.

Greenleaf Lake State Park — Greenleaf Lake State Park is a major recreational facility catering principally to those desiring to spend reasonably long camping periods in a quiet natural setting. The typical user generally has a recreational vehicle and tends to be in or approaching the retired part of his or her life. The small picnic day-use area is incidental to the theme, serving only local needs. The park is on a valley slope facing Greenleaf Lake. It has a youth camp and cabins, which offer additional long stay opportunities.

The park is near a large number of recreational areas along the Arkansas River developed primarily by the Corps of Engineers. It is within a few miles of Lake Tenkiller and recreational facilities on the south end of Fort Gibson Reservoir. The region is intensively developed with park sites of varying themes, allowing the establishment of the quiet camping theme at Greenleaf.

The facilities at Greenleaf Lake State Park consist of:

Boat Ramps	2	One to be replaced with two wide ramps
Boathouse	1	29 covered slips — being replaced with 40 stall boathouse
Rental Quarters	3	For park employees — additional being built
Storage building	3	
Cabins	14	Capacity 56 persons
Cafe	1	
Comfort Stations	1	With showers
Comfort Stations	3	Without showers
Gift shop	1	At cafe
Enclosed fishing dock	1	Concessionaire owned
Bait and Tackle Shop	1	
Gas dock	1	
Boats	20	
Paddle Boats	4	Concessionaire owned
Picnic Tables	152	
Group Shelters	2	
Group Table	1	
Softball Field	2	
Horseshoe	3	
Basketball	1	
Playground	1	3 pieces of equipment
Swimming Pool	1	
Swimming Beach	1	
Trailer Sites	2	For employees
Water, electric, sewer, RV sites	20	
Electric RV sites	37	
Hiking Trail 1 mile		
Youth Camp Building	5	Capacity 180 (Youth Camp includes 4 barracks, 1 warehouse, lodge with kitchen, dining facilities and meeting room)

Usage at the Park has been increasing each year, distributed throughout the year in the following manner:

	Visitors
September 1975	25,605
October 1975	12,278
November 1975	13,020

9/ *Open Space Element of the Comprehensive Plan — EODD — February, 1973*

CONT.

December 1975	4,020
January 1976	2,489
February 1976	2,320
March 1976	12,861
April 1976	18,600
May 1976	50,224
June 1976	53,620
July 1976	54,000
August 1976	52,000
Total	301,037

Plans are for the State Park to add land area around Greenleaf Lake. Expansion areas would be treated as a natural setting to be penetrated only by non-motorized conveyances. A 12 mile loop trail around Greenleaf Lake is planned and partially funded. Rehabilitation of existing facilities is underway.

Corps of Engineers Arkansas River Recreation Facilities — Facilities along the Arkansas River in Muskogee County were completed and opened to the public for the 1976 recreation season, although there still is poor county road access into some of the highly developed public use areas.

An estimated 1.2 million visitors used the Corps of Engineers public use areas from Webbers Falls to Catoosa (Tulsa) during CY 1975. An estimated 2 million have used the same area in CY 1976.

Facilities in Muskogee County are on the following page.

CORPS OF ENGINEERS PUBLIC USE AREAS
Muskogee County on Arkansas River

	Boat Launching Ramp	Picnic Tables	Tent or Trailer Spaces	Drinking Water	Swimming	Rest Rooms: Waterborne	Rest Rooms: Masonry Vault	Rest Rooms: Wood Vault	Courtesy Docks	Trailer Sanitary Disposal Station	Marine Sanitary Disposal Station
Three Forks Ramp	1	9	0	Yes	No	0	0	2	1	0	0
Spaniard Creek	2	47	32	Yes	No	1	2	4	2	1	1
Hopewell Park	1	17	17	Yes	No	1	0	2	1	1	0
Highway 10 Landing	1	4	0	No	No	0	0	2	1	0	0
Fort Gibson Park	1	9	9	Yes	No	0	1	2	1	1	0
Brewers Bend	1	55	50	Yes	Yes	1	4	4	1	2	0
Arrowhead Point	1	45	30	Yes	No	1	2	2	0	1	0
Total	8	186	138	All But One	1	4	9	18	7	6	1

Corps of Engineers National Recreation Area Proposal — The Corps of Engineers was authorized by a resolution adopted by the U. S. Senate Committee on Public Works dated March 26, 1971, to perform a study for establishing a National Recreation Area in Oklahoma.

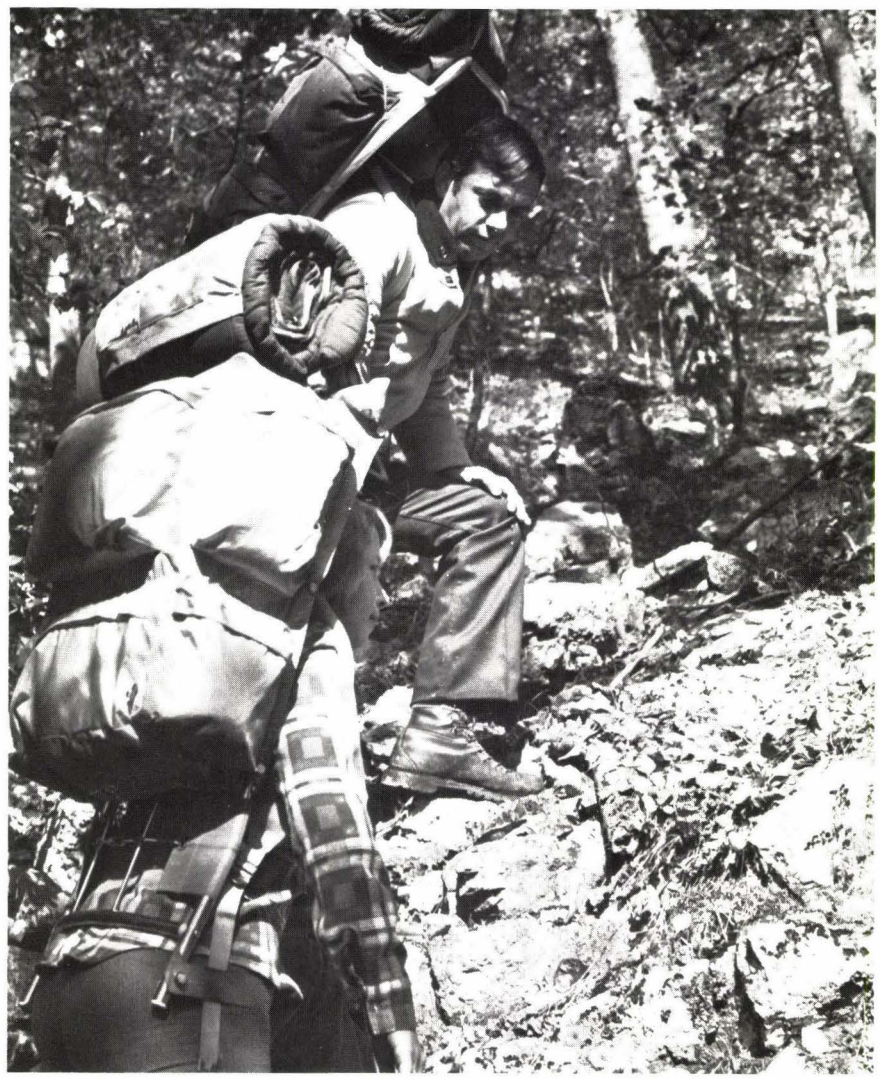
The NRA proposal envisioned combining the 33,248.76 acres which are the subject of this study in with the other federally owned lands at Robert S. Kerr, Tenkiller Ferry, Webbers Falls and Fort Gibson Reservoirs. Some state owned lands would also be included, as well as a small area (less than 2,000 acres) of conservation easements and fee land which would have to be acquired by the government.

The study was made and public hearings held, but no formal steps have been taken to implement the proposal.

Suitability of Camp Gruber for Dispersed Recreation — The whole area is suitable for dispersed recreation such as hiking, backpacking, horseback riding, driving for pleasure, nature study, etc. The area surrounding Greenleaf Lake would be highly suitable for foot trail use though trail construction could be expensive in some locations.

Land west of Highway 10 receives heavy motorcycle use. Soil on flatter areas is suitable for the use. To date motorcycles have caused very little soil erosion. Some believe that the use of motorcycles on the area could have a serious negative impact on the habitat needs of some wildlife species.

Horseback riding has been a popular activity in the more open land. The central and northern portions are highly suitable for this use.



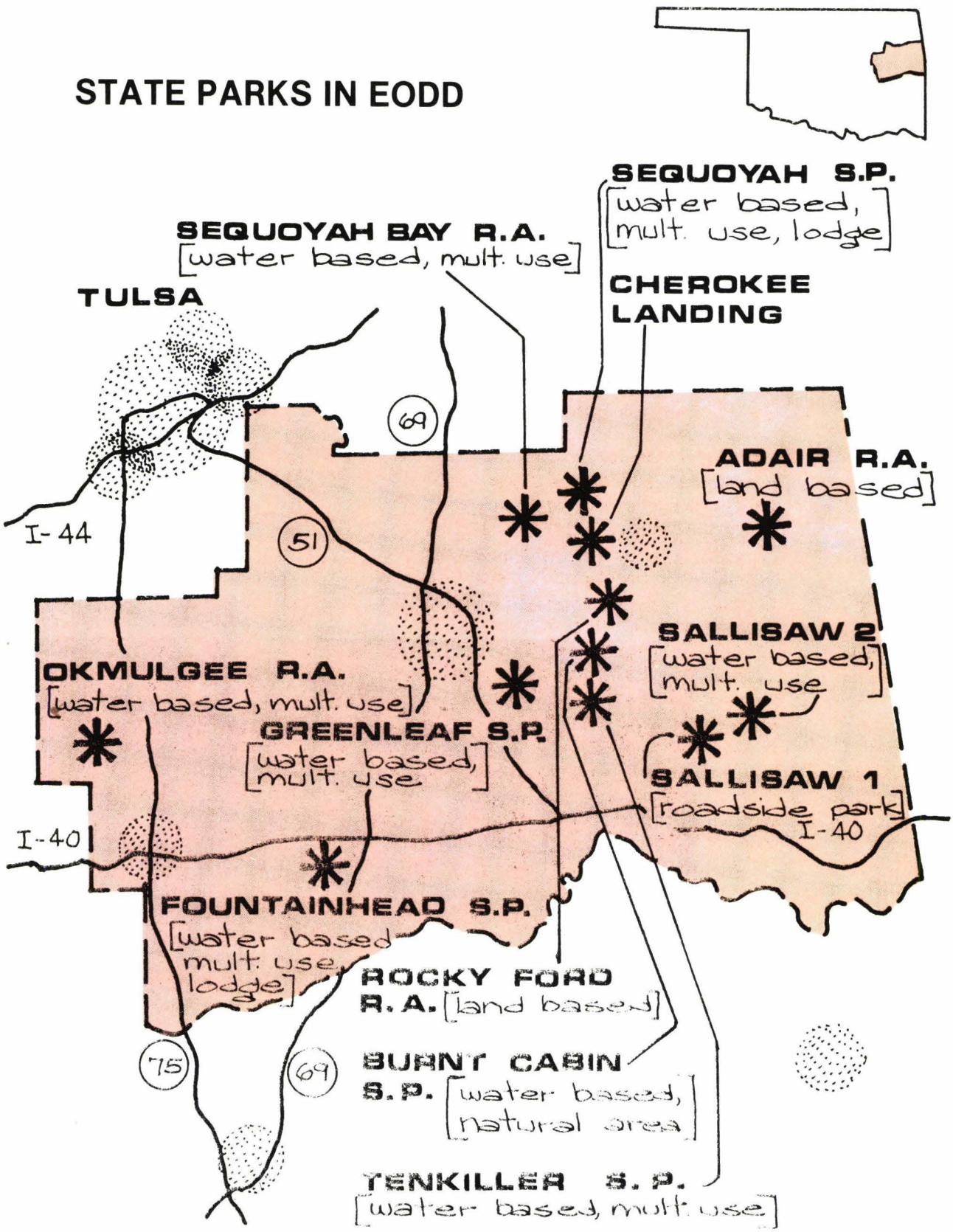
Land Suitable for Backpacking

Nearby Historical Sites in National Register[10]

County	Site	Approximate Distance (mi)
Cherokee	Park Hill, *Murrell House (Hunter's House)*	7-NNE
Cherokee	Tahlequah, *Cherokee Female Seminary*, Northeastern State College Campus	10-NNE
Cherokee	Tahlequah, *Cherokee National Capital*	10-NNE
Cherokee	Tahlequah, *Cherokee National Jail*, East Choctaw Street and Water Avenue	10-NNE
Cherokee	Tahlequah, *Cherokee Supreme Court Building*, East Keetoowah Street and Water Avenue	10-NNE
Cherokee	Tahlequah vicinity, *First Cherokee Female Seminary Site*, southeast of Tahlequah	10-NNE
Muskogee	Fort Gibson, *Fort Gibson*	4-NW
Muskogee	*Honey Springs Battlefield*, on county line, north of Rentiesville	18-WSW
Muskogee	Muskogee, *Foreman, Grant House*, 1419 West Okmulgee Street	8-W
Muskogee	Muskogee, *Union Agency*, Agency Hill in Honor Heights Park	8-W
Muskogee	Muskogee vicinity, *Fort Davis*, 2.5 miles northeast of Muskogee	6-WNW
Muskogee	*Cherokee Agency West*	1-N
Muskogee	*David Vann Salt Works*	6-SSW
Sequoyah	Akins vicinity, *Sequoyah's Cabin*, Oklahoma 101, Sequoyah's Cabin State Park	21-WNW
Sequoyah	Marble City vicinity, *Dwight Mission*, about 3 miles southwest of Marble City	12-WNW
Wagoner	Tullahassee vicinity, *Tullahassee Mission Site*, northeast of Tullahassee	15-WNW

10/ Siting Energy Facilities at Camp Gruber Oklahoma — Federal Energy Adm. June, 1975

STATE PARKS IN EODD



Vegetation

The following description is based upon a two-week study of Camp Gruber's vegetation types. This investigation was undertaken during the fall season, October 4-13, 1976. A list of the various vegetative types is in the Appendix.

The wooded area is a deciduous forest formation with oak-hickory associations occupying most of the forest. The most common type of oak-hickory association is Quercus marilandica (Blackjack Oak) and Quercus stellata (Post Oak), with Ulmus alata (Winged Elm) as another common tree. This especially applies where the tops of the hills become more xeric. Down the sides of the larger hills and into the small valleys will be found Quercus muhlenbergii (Chinquapin Oak), Carya ovalis (Sweet Pignut), and Carya illinoensis (Pecan).

The forests in the larger valleys and bluffs have many species of trees, as well as undershrubs and herbs. Some of the more common trees other than those listed above are Populus deltoides (Cottonwood), Salix nigra (Black Willow), Ulmus americana (American Elm), Celtis laevigata (Smooth Hackberry, Sugarberry), Platanus occidentalis (Sycamore), Prunus serotina (Black Cherry), Acer negundo (Box Elder), Diospyros virginiana (Persimmon), Sassafras albidum (Sassafras), and Fraxinus pennsylvanica (Green Ash). Some of the more prominent undershrubs are Lindera benzoin (Spicebush), Cercis canadensis (Redbud), Ilex decidua (Deciduous Holly), and Cornus drummondii (Rough-leaved Dogwood). The vines include Smilax bona-nox (Greenbrier), Rhus radicans (Poison Ivy), Parthenocissus quinquefolia (Virginia Creeper), and Vitis vulpina (Winter Grape).

Where the oak-hickory woods occurred in a more open type area with a more brushy type association, the trees are Blackjack Oak, Post Oak, Winged Elm, American Elm, Sassafras, Honey Locust, Black Locust, and Persimmon. The smaller trees and undershrubs are roses, Redbud, Winged Sumac, Rough-leaved Dogwood, and Corralberry.

The Camp Gruber area is composed of several glade areas and open prairies or fields. A listing of the plant species seen is included in the Appendix. However, it must be remembered that because of the time of this investigation, several species had already completed their life cycles and degenerated, especially aestival species and the serotinal species. A grid map of vegetative types is in the Appendix.

Oak Hickory Forest

Open Prairie

Winged Sumac in Brushy Type

Timber[11] [12]

The Timber Situation In and Around Muskogee County — The amount of timberland in Muskogee County is very small. Most lies east of the Arkansas River.

The forest inventory made in 1966 lists 77,900 acres of commercial forest land for the county. Commercial forests are mostly Red Oak, White Oak, Hickory, Sycamore and Cottonwood. The noncommercial forests generally are Post Oak, Blackjack Oak, Winged Elm and Hickory.

County tables for land area and commercial forest lands, growing stock, sawtimber volumes by species groups, sawtimber volumes by diameter class, and timber removals from growing stock are in the Appendix.

Two small part-time portable sawmills are the only forest industries in Muskogee County. One is north of the Gruber lands at Fort Gibson and one is south at Webbers Falls. Product output and timber removal for Muskogee County are shown on tables in the Appendix.

Adequate transportation in the form of railroads and barges in the Arkansas River navigation system could move products to mills and other locations economically. In the past, Champion International has purchased cordwood at Muskogee in the form of lighter hardwoods and pine. Fort Howard Paper Company is constructing a mill at Muskogee but will use only recycled products for their raw material.

Forest incentive programs administered by the ASCS and SCS are available to area landowners, but they have not taken advantage of these programs. The Oklahoma State Department of Agriculture Forestry Division located at Tahlequah has a service forester who provides forestry assistance in the area.

The Timber Situation on the Study Area — All natural timber stands are hardwood. A few scattered shortleaf pine plantations exist with sparse or scattered trees. Other small plantations are composed of Osage Orange, Black Locust, Ash, Cottonwood, Ponderosa Pine and Red Cedar. Most were planted in the late 1930s for watershed restoration purposes.

The area has been broken into the following three timber categories:

1. *Non-Commercial Forest Lands* which are lands presently in brush of non-commercial species, open land or timberland of Post Oak and Blackjack Oak capable of growing less than 20 cubic feet of volume per year. All of soil complex 4 and approximately 30% of soil complex 5 fall into this category.

2. *Commercial Forest Lands* which should receive *limited intensity management (LIM).* These acres are capable of growing 20-50 cubic feet per acre per year. On some soils conversion to pine may raise the volume per acre above 50 cubic feet. On north-facing slopes and bottoms there are intermingled small areas capable of growing more than 50 cubic feet per acre per year. Based on soils information and on areas presently forested, approximately 14,000 acres are in this category. Species are generally Post Oak, Red Oak, Blackjack Oak and Hickory.

3. *Commercial Forest Lands* which could receive *intensive forest management.* Based on soils information and on lands presently forested, 716 acres fall into this category. The main species here include Sycamore and Cottonwood in the bottoms, and Red Oak species, Ash and Maple on north slopes and narrow bottoms. Some have poor species composition and presently are unproductive for producing commercial wood.

Trees In Commercial Forest

11/ *East Oklahoma Product Output and Timber Removals by County — Southern Forest Experiment Station Forest Service, USDA — 1973*

12 *East Oklahoma Forests — USDA, Forest Service — Southern Forest Experiment Station, 1968*

The following management practices would more fully utilize the timber resources:

1. *Non-Commercial* Manage these lands for watershed protection and wildlife habitat.

2. *Commercial Forest (LIM)* — These lands have an estimated 400-600 board feet per acre of sawtimber and 3-8 ccf of roundwood. The manager should develop a market for these products. Volume should be sold on a periodic basis. Cultural work would consist of removal of cull trees having no wildlife value. Clearcut patches in this area would have more value for wildlife than for timber production. Non-commercial thinning could be done on better areas.

3. *Commercial Forest* — These lands include the smallest acreage. Bottom land sites are capable of growing in excess of 50 cubic feet of wood per acre per year. Commercial and non-commercial thinnings can be made to increase production of more valuable species. Some areas should be regenerated to more desirable species.

In keeping with the intent of the Bankhead-Jones Farm Tenant Act, small plantations of conifers and hardwoods could be established to demonstrate management of these species. Suggested species include Shortleaf and Loblolly Pine, Black Walnut and Ash.

Range

Prior to acquisition, the Gruber lands were broken up into small farms, grassland and woodland. The grassland was depleted from its former native state of native bluestem (big and little) grass, Indian grass, switch grass, etc. At the time of purchase livestock use had almost completely disappeared.

Not much is known of the grazing use while Gruber was an active Army installation. Grazing resumed in the late 60s. At this time native grasses were tall and in abundance. The land was leased for a 5 year period beginning January 1, 1969, and ending December 31, 1973, to Gary Weisbart of Denver, Colorado. The lease was amended, changing the lease to the Braggs Cattle Company of Tucumcari, New mexico.

A new license was issued for the 76 and 77 grazing season to Lynn Hubler authorizing 391 Animal Units of grazing for a 5 month season — April 1-August 31 in 4 divisions.

Animal Unit was defined as:

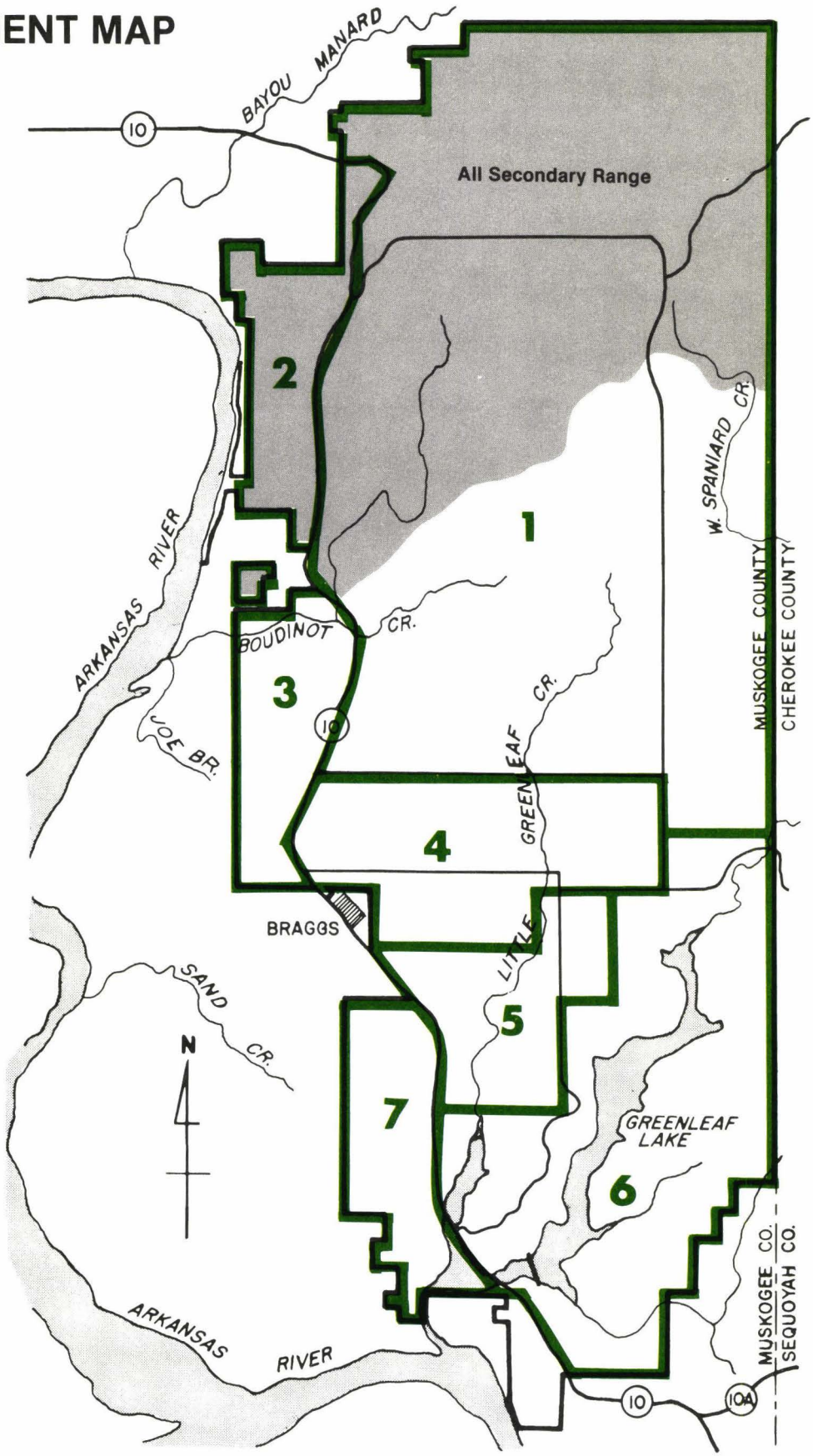
	Animal Unit (AU)
1 cow with or without calf under 6 months	1.0
1 bull — mature	1.4
1 steer or heifer (over 1 year)	1.0
1 weaned calf to yearling, 400-650 lbs.	0.5

Steers in the weaned calf to yearling, 400-650 lbs. category, were primarily grazed by the permittee. These were purchased just prior to the season and contracted to sell at the end of the season. The license was well administered by the Corps of Engineers and all terms of the permit were carried out.

The property lines are fenced, as well as the State Park, both sides of Highway 10, and the cantonment area. The east property fence is maintained by the Department of Wildlife Conservation, the remainder by the licensee using the area. Generally the fences are in good condition except where some vandalism has occurred.

Typical Fence

RANGE ALLOTMENT MAP



The Oklahoma Department of Wildlife Conservation leases approximately 16,000 acres for grazing 400 head of cattle on their land east of Camp Gruber in Cherokee County. A rotation system is used during a five month season. Cows are dipped for tick control monthly and every two weeks when these parasites become more numerous. This area is fenced into 4,000 acre sub-allotments.

A range examination was conducted in November 1976, dividing Camp Gruber into seven grazing allotments shown on the following map.

For range analysis purposes, Camp Gruber has three distinct types of vegetation. The largest is called heavy brush or scrub oak-hickory. Prairies or open areas with a grass aspect make up the second largest type. The third type is a light brush that is going from open grassland to the oak-hickory type.

Most of the grazing is done in the open areas or prairies. Primary range was considered to be areas with more than 100 pounds of desirable forage per acre and areas that the livestock used. Secondary range was considered to be areas that were open grassland not used by livestock and not likely to be used without improvements, light brush areas not used by livestock, and heavy brush areas. Unsuitable range was considered to be areas too steep for safe grazing without causing environmental problems, steep areas covered by heavy brush, areas covered by water, and areas that were paved or had concrete footings.

The analysis showed that all allotments except No. 2 could be used for grazing. With a proper use of 30 percent, total capacity at Camp Gruber was determined to be 3,570 animal unit months or 712 head of mature cattle for the five-month period. This amount would depend upon better distribution of the livestock and improvement management by the permittee. Allotment No. 2 was considered either in secondary range or in unsuitable range and it would not be a good grazing area without opening up some of the heavy brush and prescribed burning the light brush areas.

The complete range analysis is in the Appendix.

Grassland

Water

Surface Water — The study area is in the Arkansas-White-Red Water Resource Region, Arkansas River Basin. All streams flow into the Arkansas River. The area is drained by Boudinot, West Spaniard, Greenleaf, Little Greenleaf and Sand Creeks, Joe Branch and tributaries of Bayou Manard. Little Greenleaf, Greenleaf and Sand Creeks are spring fed and flow year-round. Others appear to be intermittent and do not flow during some portions of each year but pools exist except during prolonged dry periods. There are several lakes less than five acres in size, scattered throughout the area used primarily by livestock and wildlife, some containing fish.

Greenleaf Lake, with 920 acres, is in the southern portion of the study area. Its primary source of water is Greenleaf Creek. The watershed is mainly forested and drains the eastern one-third of the study area and that portion of Cherokee County which was part of Old Camp Gruber and now is administered by the Oklahoma Department of Wildlife Conservation.

The Arkansas River and the Illinois River are located in the immediate vicinity, each with one or more impoundments. Just west is the Arkansas River and southwest downstream is an impoundment on the river created by the Webbers Falls Lock and Dam. Webbers Falls Lock and Dam is a navigational facility and includes a hydroelectric power generation facility.

Arkansas River water quality is poor due to its high mineral content (sodium chloride and calcium sulfate). These minerals make the water unsatisfactory for irrigation and unsuitable for municipal or domestic use, but it can be used by industry.

Approximately four miles east of the study area is Tenkiller Ferry Reservoir on the Illinois River. This is a flood control and hydroelectric power development. Water quality of the Illinois River is generally good and waters are chemically suited for most uses.

Ground Water — Most of the surface structure in the study area is composed of the Pennsylvania age Atoka Formation. This formation is several hundred feet thick, thins northward, and consists of sandstones, siltstones, interbedded shales and a few limestones. Most wells yield from a fraction of a gallon per minute to a few gallons per minute of fair to poor quality water.

Alluvium in the valley of the Arkansas River in the Muskogee area will yield 100 to 500 gallons per minute. The alluvium consists of sand and gravel and averages about 40 feet in thickness. Water depth is 10 to 20 feet, fluctuating seasonally and may be several feet above or below the average. Although very little of the Arkansas River valley alluvium is on the study area, it is adjacent to the southwestern boundary and is capable of yielding considerable quantities of hard but otherwise good quality water.

Terrace deposits exist along the Arkansas River and extend into Camp Gruber at the southwest edge in the vicinity of Braggs. These deposits are about 90 feet thick and consist of clay, silt, sand and gravel. Wells in these deposits yield 20 to 125 gallons per minute. Terrace deposits along other streams are generally too thin or too fine grained to yield significant amounts of water.

The deeper aquifers at Camp Gruber have not been tested or proved.

In general, the Arkansas River alluvium and terrace materials adjacent to Camp Gruber are the best prospects for several hundred gallons per minute (up to one cubic foot per second) of hard but good quality water. The Atoka Formation, making up most of the surface of Camp Gruber, can be expected to yield only a few gallons per minute of fair to poor quality water. The underlying Mississippian Keokuk, Reeds Spring, and Boone Formations would probably yield less than 50 gallons per minute of fair to good quality water, but are untested. The underlying Roubidoux, Gasconade, Potosi, Eminence and Burgen Formations are untested at Camp Gruber but might yield from tens of gallons per minute to hundreds of gallons per minute of questionable quality water. Water from some of these deeper formations in surrounding areas is known to be salty, to contain hydrogen sulfide, or to be extremely hard.

There probably is a ground water supply in the study area adequate for domestic or stock supply but inadequate for industrial or commercial purposes.

Watershed Conditions — The overall condition of the watershed in the study area has not improved since the late 1930s. A large majority of the gullies and eroded areas that existed in 1938 (as seen in 1938 aerial photographs) still exist today. Some of these areas have revegetated naturally, but additional eroding areas have been created by military activities since 1945. Some terraced areas show up on the 1938 photos in pasture fields. Many of the terraces are still effective.

It is estimated that 43 acres in the study area need erosion control treatment. This includes approximately 12,000 feet of gullies and approximately 37 acres of eroding areas. These areas were determined from

Active Erosion

steroscopic study of 1973 aerial photos, with limited field checking.

A grid map analysis of soil erosion potential is in the Appendix.

Wildlife

Habitat Description — Roughly three-fourths of Camp Gruber receives minimal wildlife management by the Oklahoma Department of Wildlife Conservation. Wildlife improvements consist of four permanent fenced food plots plus several unfenced strips which are planted annually.

Fifty-three percent of the wildlife habitat at Camp Gruber is wooded, with Post Oak and Blackjack Oak being the predominant species. Thirty-six percent is open. Much of this open area is classified as tall grass prairie, based on soil type and vegetative cover, and is being invaded by brush, mostly sassafras, sumac and persimmon. Seven percent of the habitat is already classified as brush. The remaining four percent of the habitat is surface water, with the bulk of this being Greenleaf Lake and backwaters of Webbers Falls Reservoir. The remainder is small creeks and ponds.

Much of the wooded area at Camp Gruber is poor wildlife habitat, due to crown closure. All of Camp Gruber can be classified as deer habitat, and approximately 50 percent is suitable for quail and rabbit. The timbered areas support a moderate squirrel population.

Wildlife Food Plot

Most Significant Game Species

Wildlife Species — Deer is the most significant game species found on Camp Gruber. At present the area supports approximately one deer per 30-35 acres. Much higher population densities can be expected with intensified management. This is evidenced by the high deer population in adjacent Cherokee County where intensive deer management is practiced on state owned lands.

Several flocks of wild turkeys (Rio Grande strain) are also found on the area. A moderate bobwhite quail population inhabits the open areas and adjoining edges. In all probability, the quail population could be enhanced by a prescribed burning program. Furbearers, squirrels, other small game, and non-game species are also inhabitants.

The only endangered wildlife species known to inhabit or frequent the area is the bald eagle. Several frequently winter in the vicinity of Greenleaf Lake and Webbers Falls Reservoir.

Use by the Public — From 1968 to 1974 Camp Gruber and the adjacent state owned lands in Cherokee County received an average of 145,480 man days use per year, with a range of 113,400 to 176,000. The study area probably receives one-half to two-thirds of this total use. These figures are based on accurate readings from car counters with the average number of persons per car based on a personal interview with the occupants of 500 cars per year. Seventy-five percent of this utilization was by hunters, with some use by sightseers, hikers and picnickers. Data from public use investigations show that the annual man day usage is expected to reach 250,000 by 1980.

Camp Gruber is within 60 miles of an estimated 400,000 people. It is located adjacent to Cherokee County, which has consistently been one of the state's high deer kill counties, thus attracting hunters from great distances. Public hunting lands comprise less than one percent of the state's area, making such public areas very attractive to sportsmen.

It is estimated that 85-90 percent of the privately owned land in Muskogee County is posted. Because of this, approximately 90 percent of the hunting in the county is conducted at Camp Gruber. The area supports small game populations equal to those found on private land throughout the county. Approximately 75 percent of the county's deer kill comes from the Gruber area.

Industrial Potential

A private research organization evaluated two sites at Camp Gruber to determine their suitability for an energy center. The report, which was authorized by the Federal Energy Administration, was prepared by Battelle Memorial Institute in June 1975.[12] The study was one of several at different places in the United States to identify and analyze issues about the energy center concept. At present, there are no energy centers in the United States.

The two sites evaluated at Camp Gruber are shown on the map in the Appendix. Area "A" is a tract of about 1,600 acres on a high bluff overlooking the Arkansas River. Area "B" is a tract of about 5,800 acres situated where the Camp Gruber improvements were located.

The study concluded that Camp Gruber appeared to be a satisfactory site for many types of energy facilities but said two topics needed more investigation and planning. They were obtaining enough water for an energy center and preparing an energy center development plan. The study's conclusions are in the Appendix.

After the FEA study, the Forest Service study team investigated Camp Gruber for its suitability as an industrial park. Five sites were found to be suitable from the standpoint of slopes, soils and geology. Grid maps showing the analysis of the sites are in the Appendix.

It was concluded that 600 to 1,000 acres of Site 5 east of the National Guard buildings would be the most suitable for light industry. Soils there have limitations, all of which can be overcome. The site is relatively flat and has the best topography of those studied. The old roads, concrete foundations, etc. on Site 5 would hinder other resource management but have no adverse effect on the development of light industry.

The following chart shows how the selection of Site 5 was reached. No attempt was made to compare the Camp Gruber sites with possible industrial sites on private land.

Analysis of Undeveloped Industrial Sites

	Site Number				
Factors Evaluated	1 (North)	2 (Central)	3 (Sand-Hills)	4 (South-east)	5 (Canton-ment)
Slope	4	3	2	4	1
Soil	2	3	1	2	4
Distance from Railroad	3	1	1	4	1
Access to River	2	2	1	5	2
Compatibility with Existing Recreation Facilities	3	1	5	5	1
Proximity to Muskogee	1	2	3	5	2
Availability of Water	3	2	1	5	3
Size	4	2	3	3	1
Total Suitability Rating	22	16	17	33	15

Note: On a scale of ascending unsuitability, each factor was rated from 1 (most suitable) to 5 (least suitable). The lower total ratings indicate the more suitable sites.

12/ East Oklahoma Forests — USDA, Forest Service — Southern Forest Experiment Station, 1968

Typical Land Studied For Light Industry

V. PROPOSALS CONSIDERED BY STUDY TEAM

Upon completion of the technical phase, proposals for use were solicited from appropriate agencies, organizations and individuals. A total of 18 letters were mailed on December 7, 1976. In addition, the Executive Director of the Eastern Oklahoma Development District in Muskogee, the Chairman of the Governor's Advisory Committee on Camp Gruber, and a representative of the Oklahoma National Guard were contacted personally or by phone and asked to provide input.

The response indicates much interest in seeing the lands at Camp Gruber play a larger role in the activities of the area. Following are copies of the letters of December 7, 1976, all proposals received, and the study team's comments.

5540

December 7, 1976

Honorable David L. Boren
Governor of Oklahoma
Oklahoma City, Oklahoma 73105

Dear Governor Boren:

For the past 3 months, we have been gathering information and resource data for the Federal lands at Camp Gruber. Information collected includes a soils survey, range analysis, and vegetative analysis as well as existing management and uses. Also included is general information on the surrounding area.

We are now starting the second part of the study (Phase II), gathering and analyzing proposed alternatives for the use of the land. Our tentative schedule is to assemble all of the alternatives by January 15.

We would like to have your proposal for use of the Federal lands at Camp Gruber. The information that we have will be available for your use.

John Archer, my Team Leader for the study, will be available to meet with you.

Please let me know if you have questions.

Sincerely,

ALVIS Z. OWEN
Forest Supervisor

cc: Archer

Identical letters sent to attached list.

5540 - December 7, 1976

Identical letters sent to:

Honorable David L. Boren
Governor of Oklahoma
Oklahoma City, Oklahoma 73105

Mr. Abe L. Hesser
Executive Director
Oklahoma Department of Tourism & Recreation
500 Will Rogers Building
Oklahoma City, Oklahoma 73105

Mr. Chris T. Delaporte Replaced
Director, Division of State Parks
Oklahoma Department of Tourism & Recreation
500 Will Rogers Building
Oklahoma City, Oklahoma 73105

Mr. George Wint, Director
Oklahoma Department of Wildlife Conservation
1801 North Lincoln
Oklahoma City, Oklahoma 73105

✓ Mr. Scott Eubanks, Director
Oklahoma Department of Industrial Development
500 Will Rogers Building
Oklahoma City, Oklahoma 73105

✓ Mr. Kenneth W. Fielder
Corps of Engineers, Tulsa District
P. O. Box 61
Tulsa, Oklahoma 74101

Dr. Chester Bynum, President
Oklahoma Wildlife Federation
1818 Thorton Street
Norman, Oklahoma 73069

5540

December 7, 1976

Mr. Elmer G. Peebles
Director, Forestry Division
Oklahoma State Board of Agriculture
122 State Capitol Building
Oklahoma City, Oklahoma 73105

Dear Mr. Peebles:

For the past 3 months, we have been gathering information and resource data for the Federal lands at Camp Gruber. Information collected includes a soils survey, range analysis, and vegetative analysis as well as existing management and uses. Also included is general information on the surrounding area.

We are now starting the second part of the study (Phase II), gathering and analyzing proposed alternatives for the use of the land. Our tentative schedule is to assemble all of the alternatives by January 15.

If you have a proposal for the use of the Federal lands at Camp Gruber, please submit it to the Team at your earliest convenience. The information that we have collected will be available for your use. If you desire, John Archer, my Team Leader for the study, will be available to meet with you.

Please let me know if you have any questions.

Sincerely,

ALVIS Z. OWEN
Forest Supervisor

cc: Archer

Same letter to: Dr. William F. Taggart
Associate Director
Cooperative Extension Service
Oklahoma State University
Stillwater, Oklahoma 74074

5540

December 7, 1976

Honorable Henry Bellmon
United States Senate
Washington, D. C. 20510

Dear Senator Bellmon:

I appreciated the opportunity of presenting our findings in Phase I of the study of Federal lands at Camp Gruber. I hope it was of benefit to you and Mr. Oakley.

The Team started Phase II of the study December 6. Phase II is gathering and analyzing proposed alternatives for the management and use of the land.

At our meeting you said you would like some input in the proposed use of the land.

We would be glad to furnish maps or any of the information we have gathered or have my Team Leader get with you or your representative at your convenience.

Our tentative schedule is to assemble all of the proposals by January 15.

Please let me know if you have any questions.

Sincerely,

ALVIS Z. OWEN
Forest Supervisor

cc: Archer

5540

December 7, 1976

Honorable Dewey F. Bartlett
United States Senate
Washington, D. C. 20510

Dear Senator Bartlett:

For the past 3 months, we have been gathering information and resource data for the Federal lands at Camp Gruber. Information collected includes a soils survey, range analysis, and vegetative analysis as well as existing management and uses. Also included is general information on the surrounding area.

We are now starting the second part of the study (Phase II), gathering and analyzing proposed alternatives for the use of the land. Our tentative schedule is to assemble all of the alternatives by January 15.

If you have a proposal for the use of the Federal lands at Camp Gruber, please submit it to the Team at your earliest convenience.

Please let me know if you have any questions.

Sincerely,

ALVIS Z. OWEN
Forest Supervisor

cc: Archer

Identical letters sent to attached list.

5540 - December 7, 1976

Identical letters sent to:

Honorable Dewey F. Bartlett
United States Senate
Washington, D. C. 20510

Honorable Carl Albert
Speaker of the House of Representatives
Washington, D. C. 20515

Mr. L. W. "Bud" Johnson
State Director
Farmers Home Administration
Agriculture Center Office Building
Stillwater, Oklahoma 74074

Mr. Roland Willis
State Conservationist
Soil Conservation Service
Agriculture Center Office Building
Stillwater, Oklahoma 74074

Mr. Harold V. Hunter
State Executive Director
Agricultural Stabilization & Conservation Service
Agriculture Center Office Building
Stillwater, Oklahoma 74074

Dr. Frank H. Baker
Director of Extension
Cooperative Extension Service
Oklahoma State University
Stillwater, Oklahoma 74074

Mr. Paul T. Flynn
Real Property Division
Property Management & Disposal Service
General Services Administration
819 Taylor Street
Fort Worth, Texas 76102

5540

December 7, 1976

Honorable Theodore M. Risenhoover
House of Representatives
Washington, D. C. 20515

Dear Mr. Risenhoover:

I appreciated the opportunity of presenting our findings in Phase I of the study of the Federal lands at Camp Gruber. I hope it was beneficial to you and the group of local representatives.

The Team started Phase II of the study December 6. Phase II is gathering and analysing proposed alternatives for the management and use of the land.

At our meeting you said you would like some input in the proposed use of the land.

We would be glad to furnish maps or any of the information we have gathered or have my Team Leader get with you or your representative at your convenience.

Our tentative schedule is to assemble all of the proposals by January 15.

Please let me know if you have any questions.

Sincerely,

ALVIS Z. OWEN
Forest Supervisor

cc: Archer

STATE OF OKLAHOMA
Office of the Governor
DEPARTMENT OF INDUSTRIAL DEVELOPMENT
OKLAHOMA CITY, OKLAHOMA 73105

RECEIVED
JAN 13 1977
500 Will Rogers Building

Scott Eubanks, Director
405/521-2401

Odachita N.F.
For. Supv.
Dep. For. Supv.
Div. Mgmt. Ser.
Admin. Ser.
R & F
Criminal Inv.
Mgmt. Anal.
Off. Ser.
Personnel
Dir. Planning
Dir. Res.
Dir. Tech. Ser.
Dir. Wildlange
Exec. Sect.
OTHER RTG.

Capt. to Archer 1/14/77

January 11, 1977

Mr. Alvis Z. Owen
Forest Supervisor
Department of Agriculture
Ouachita National Forest
P.O. Box 1270
Hot Springs, Arkansas 71901

RE: 5540

Dear Mr. Owen:

Thank you for your letter of December 7, 1976, which you gave me an opportunity to have input into your Camp Gruber study. While I cannot refer to specific portions of the Gruber land, I do hope your study will identify certain portions of the site as future industrial land. The Muskogee area has enjoyed considerable economic growth in recent years and indications are that this growth will continue. Projections such as Fort Howard Paper Company make it necessary and desirable for new industrial sites to be developed to meet this anticipated growth. I view Camp Gruber as a tremendous asset to our State and to the Muskogee area, in particular.

I favor multi-use for the lands, which will include portions of it being dedicated to wildlife management, mulitary use, parks and recreation and forestry, as well as industrial development. I regret that at this time I cannot be more specific on my recommendations. However, I hope that at the conclusion of your study, interested parties may review it in order to make final recommendations.

Sincerely,

Scott Eubanks
Director

SE/nm

Oklahoma Department of Industrial Development

Proposal

A. Identify land for future industrial use.

Study Team Comments

1. Five widely distributed sites were rated on their suitability for industrial use.
2. EODD projections show need for approximately 1,000 acres of new industrial sites by the year 2000. There are presently unused lands in existing industrial parks.
3. Any one of four sites could be selected for future developments and managed for multiple uses until needed.
4. General Services Administration has agreed to temporarily withhold any further action to dispose of Sites 1 and 2 until they can be studied as an integral part of the 33,248.76 acres at Camp Gruber.

   GSA became directly involved when the Department of the Army reported 900.53 acres of fee military lands as excess under Ft. Worth District Report of Excess No. 834 dated May 13, 1968. GSA subsequently arranged for the Bureau of Outdoor Recreation to grant 455.49 acres of these lands to the Oklahoma Tourism and Recreation Department for public recreation purposes, thereby leaving 445.04 acres still in federal ownership.

   Besides the 445.04 acres of excess military lands mentioned above, 2,392.66 acres of Title III lands were turned over to GSA for disposal. The Assistant Secretary of Agriculture concurred in this action in a letter dated September 20, 1972. The lands in custody of GSA are all located west of Highway 10 and north of Braggs.

B. Favor multi-use of land (including wildlife, military, parks and recreation, forestry, industrial).

This principle is compatible with the other proposals received by the study team and can be implemented without adverse impacts on the physical resources at Camp Gruber.

JAN 2 5 1977

STATE OF OKLAHOMA COL RHODES/jb/249
MILITARY DEPARTMENT
3501 MILITARY CIRCLE N.E.
OKLAHOMA CITY, OKLAHOMA 73111
405 – 427-8371 Autovon 883-3720

OKOT

14 January 1977

SUBJECT: Prime Management of Camp Gruber, OK

Mr. John Archer
District Forest Ranger
U.S. Dept of Agriculture
Forest Service
Ouachita National Forest
Hot Springs, Arkansas 71901

1. Reference: Memorandum Camp Gruber from Oklahoma Military Department, September 1976.

2. The purpose of this letter is to set forth the premise of prime managerial responsibility of Camp Gruber, OK.

3. The 26,075 acres of Camp Gruber constitute the only large land area available to the Oklahoma National Guard, both Army and Air, USAR and other military units for training within the State.

4. This area has been under license to the Oklahoma Military Department since 1949 and has, during this time, also been jointly used by the Department of Wildlife to establish a game reserve in North Eastern Oklahoma. It has, however, been managed primarily for purposes other than military. This causes some problems as the prime user has been the Oklahoma Army National Guard. The memorandum referenced in paragraph 1 (copy inclosed) enumerates the extensive use made of this land by the OKARNG and other units.

5. It is the premise of this Department that primary managership of Camp Gruber be placed with the prime user for better management of what history has shown to be the agency that has been the prime user of these lands.

6. It is not the intent of this Department to take over this land for its use solely. A joint use agreement has been in force with the Wildlife Department and would be rewritten with this agency.

7. It is the intent, however, to place the burden of scheduling and use of this land with the Oklahoma Military Department. The primary purpose of the lands known as Camp Gruber would be for military training. Scheduling of military units from around the area would be the responsibility of The Adjutant General. Use of this land for military purposes would not prohibit use by other organizations, however, those organizations wishing to use Camp Gruber would have to request usage from The Adjutant General.

8. In the past years, a great deal of money has been invested by the Military, both State and Federal, on Camp Gruber. As the prime managers of this land more money could be spent justifiably to maintain and improve facilities, roads, ranges, etc.

9. It can not be overstated that Camp Gruber represents the only area large enough to train the units of the Oklahoma Army National Guard within the State. Loss of this training area would cause serious training problems that would reflect in the canability of the military units to maintain their National Readiness Posture and better support the people of Oklahoma.

FOR THE COMMANDER IN CHIEF:

1 Incl
as

JOHN COFFEY, JR
MG, AGC, OKARNG
The Adjutant General

Oklahoma Military Department

Proposal

A. Area presently licensed should be administered by Military Department primarily for military training.

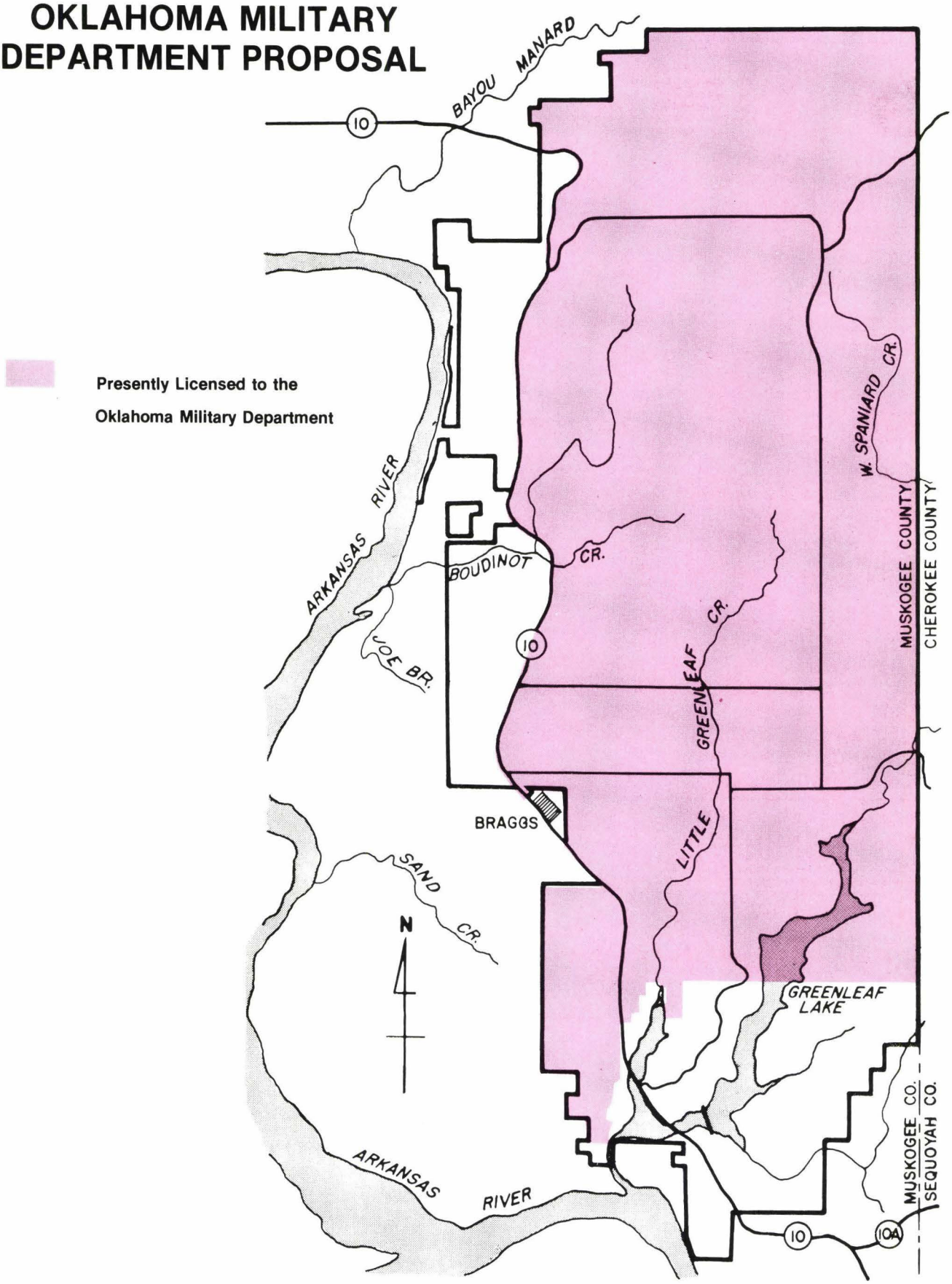
Study Team Comments

1. Camp Gruber is vital to carrying out the National Guard's mission.
2. The Guard has invested a great deal of money in the area.
3. The Guard has a long-range development plan for Camp Gruber.
4. The study team's grid analysis of primary use areas indicates that the military training could be carried out on a much smaller area than presently licensed.
5. It might be desirable for the Guard to have administrative control over a cantonment area of approximately 100 acres, but they do not have the professional expertise to manage the physical resources on the remaining area.
6. Guard training does not qualify as a bona fide military use authorized under Executive Order 9282.

B. Hunting would be permitted by agreement with the Oklahoma Department of Wildlife Conservation.

1. National Guard training is not one of the purposes for which Title III lands were acquired, although such use might be permitted where it does not conflict with the purposes specified in the Bankhead-Jones Farm Tenant Act.
2. At present the Guard training (approximately 10,000 man days annually) and public hunting (approximately 70,000 man days annually) uses have been fairly compatible. Both are expected to increase, hunting use most drastically, so a higher degree of cooperation will be required to prevent conflicts with other uses and prevent adverse impacts on the physical resources.

OKLAHOMA MILITARY DEPARTMENT PROPOSAL



WILDLIFE CONSERVATION COMMISSION

H. B. VAN PELT, CHAIRMAN — ELLIS HOLLY, MEMBER
TOM H. LOGAN, VICE CHAIRMAN — DOYLE BURKE, MEMBER
JACK STAMPER, SECRETARY — JOHN D. GROENDYKE, MEMBER
MERVIN LAWYER, MEMBER — BRYAN W. WAID, MEMBER

GEORGE B. WINT, DIRECTOR
GARLAND FLETCHER, ASSISTANT DIRECTOR
KENNETH H. JOHNSTON, ASSISTANT DIRECTOR

OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION

1801 N. LINCOLN — P.O. BOX 53465 — OKLAHOMA CITY, OK 73105 — PH. 521-3851

December 14, 1976

RECEIVED
DEC 16 1976

Ouachita F.
For.
D
Dir.
Admin. Ass't.
B & F
Chief, Fish Inv.
Mgmt. Anal.
Off. Ser.
Personnel
Dir. Planning
Dir. Res.
Dir. Tech. Ser.
Dir. Wildlife
Exec. Sect.
OTHER RTG.
Files

Alvis Z. Owen
Forest Supervisor
Ouachita National Forest
P. O. Box 1270
Hot Springs, Arkansas 71901

Dear Mr. Owen:

This responds to your letter of December 7 soliciting our thoughts relative to public use of the Camp Gruber area in light of the study you are currently conducting there.

First and foremost we want to see the area - or most of it, at least - remain in public ownership.

One way to insure this would be for the Oklahoma Wildlife Conservation Department to acquire the Forest Service's interest in the area, through land exchange or outright purchase. However, in analyzing our financial capability to handle such an undertaking I don't believe that is a viable prospect, at least in the foreseeable future.

Realistically, the only contribution that the Department can make is to assure continued responsible stewardship in managing the wildlife resources of the area under whatever arrangement as should ultimately emerge.

Should the U. S. Congress and the Oklahoma Legislature decide to transfer all or any part of the Gruber lands to this Department we would accept ownership and management responsibilities. On the other hand, we are amenable to entering into most any cooperative multi-agency management plan which maintains a policy and practice of continued public hunting on the area.

We stand ready to be of any further assistance we can offer.

Sincerely,

George B. Wint
Director

Make Copy and Send to John Archer - Jessieville RD

GBW:ERC:bkh done 12/21 1/73

36

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

Jessieville RD

REPLY TO: 1310 Planning — January 11, 1977

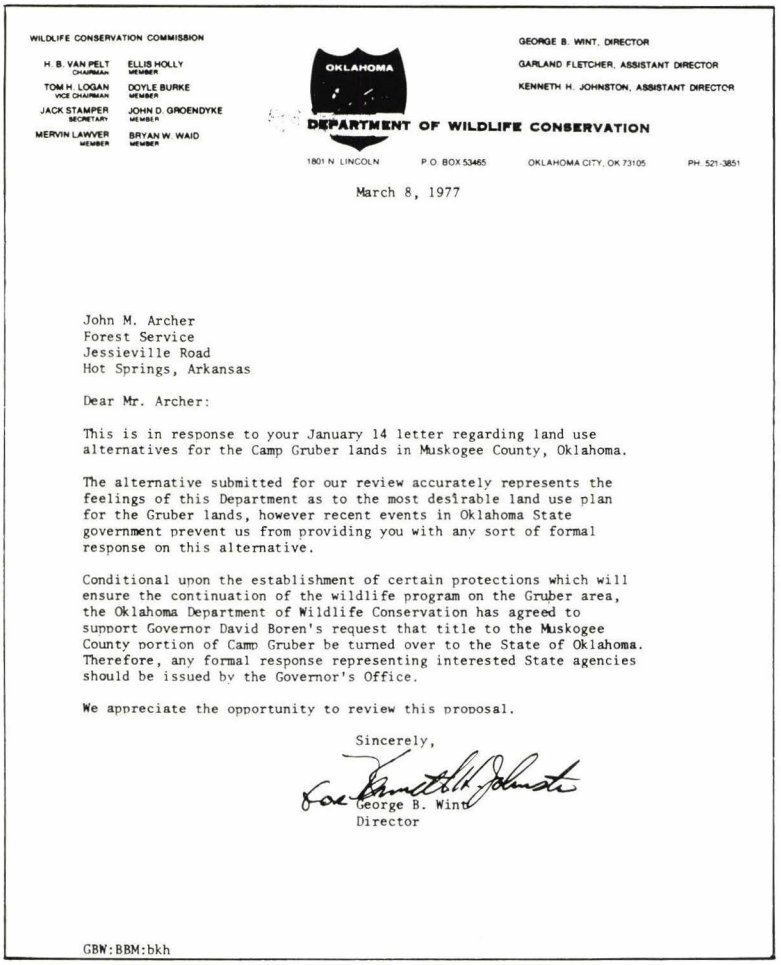
SUBJECT: Camp Gruber Study

TO: Record

Talked with George Wint to clarify the Department of Wildlife Conservation alternative.

- They want the whole thing for wildlife conservation.
- They can work with the State Park people.
- They are not for industrial sites or energy facilities on the study area though if one is considered west of Highway 10 would be best.
- Works with State Forestry people and has own Forester-Biologist to solve crown canopy closure problem.
- Would like to have more people work there but not finance for this.
- Would like to whittle down the cantonment area.

JOHN M. ARCHER
District Ranger



WILDLIFE CONSERVATION COMMISSION

H. B. VAN PELT, CHAIRMAN — ELLIS HOLLY, MEMBER
TOM H. LOGAN, VICE CHAIRMAN — DOYLE BURKE, MEMBER
JACK STAMPER, SECRETARY — JOHN D. GROENDYKE, MEMBER
MERVIN LAWYER, MEMBER — BRYAN W. WAID, MEMBER

OKLAHOMA
DEPARTMENT OF WILDLIFE CONSERVATION

GEORGE B. WINT, DIRECTOR
GARLAND FLETCHER, ASSISTANT DIRECTOR
KENNETH H. JOHNSTON, ASSISTANT DIRECTOR

1801 N. LINCOLN P.O. BOX 53465 OKLAHOMA CITY, OK 73105 PH. 521-3851

March 8, 1977

John M. Archer
Forest Service
Jessieville Road
Hot Springs, Arkansas

Dear Mr. Archer:

This is in response to your January 14 letter regarding land use alternatives for the Camp Gruber lands in Muskogee County, Oklahoma.

The alternative submitted for our review accurately represents the feelings of this Department as to the most desirable land use plan for the Gruber lands, however recent events in Oklahoma State government prevent us from providing you with any sort of formal response on this alternative.

Conditional upon the establishment of certain protections which will ensure the continuation of the wildlife program on the Gruber area, the Oklahoma Department of Wildlife Conservation has agreed to support Governor David Boren's request that title to the Muskogee County portion of Camp Gruber be turned over to the State of Oklahoma. Therefore, any formal response representing interested State agencies should be issued by the Governor's Office.

We appreciate the opportunity to review this proposal.

Sincerely,

George B. Wint
Director

GBW:BBM:bkh

Oklahoma Department of Wildlife Conservation

Proposal

A. Land should remain in public ownership, either state or federal.

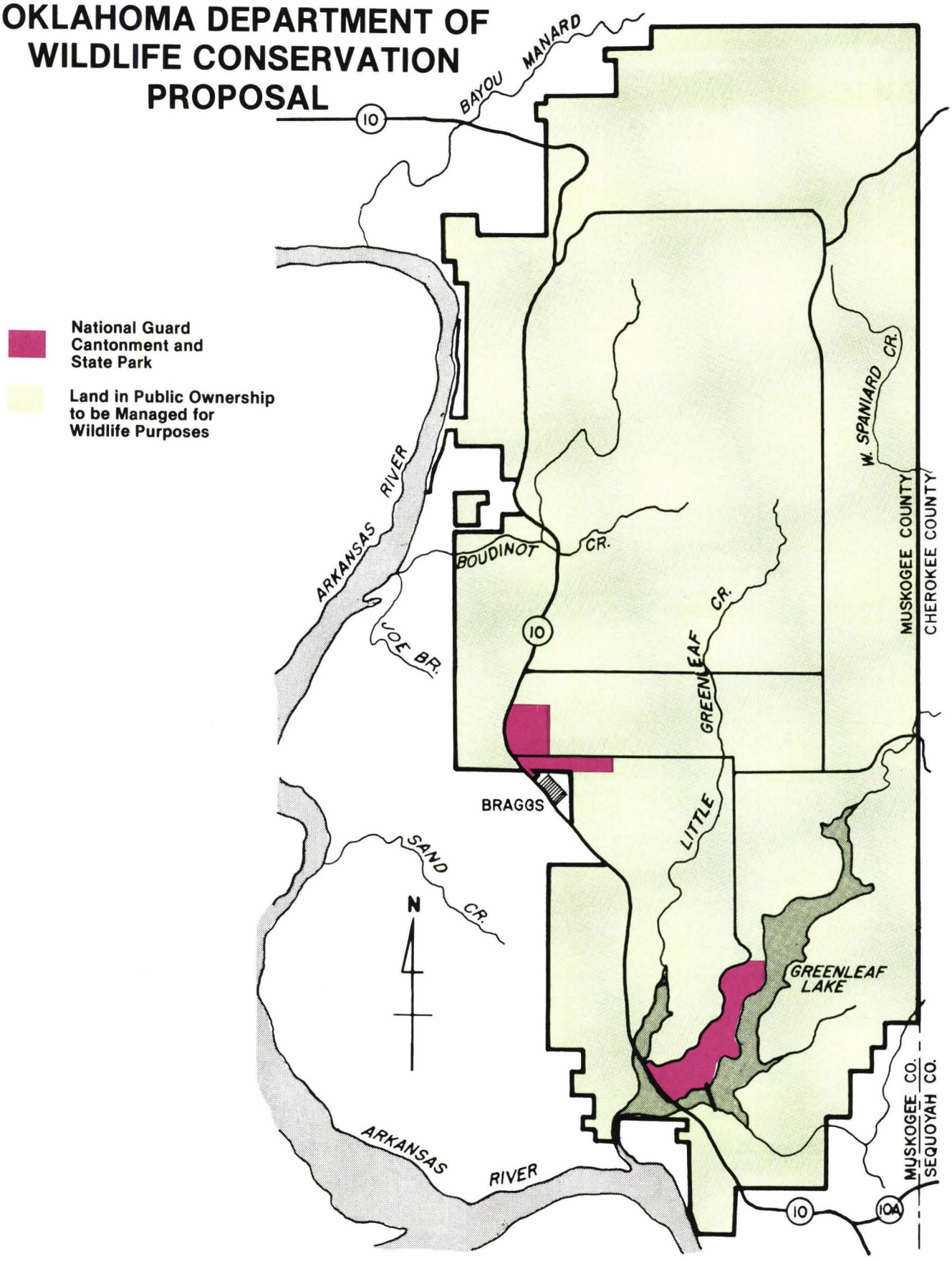
B. Wildlife Management should be practiced on the entire area, not just area presently licensed.

Study Team Comments

1. An exception to this proposal might be necessary if and when the public interest is served by developing an industrial site at Camp Gruber.
2. Proposal is flexible about who should administer land, indicating an ability to cooperate with other users to provide public hunting.
3. The Department of Wildlife Conservation is the only state agency with sufficient land base to enter into a land exchange with the Federal Government for lands at Camp Gruber.
4. The Department has the professional experience to manage the physical resources at Camp Gruber.

1. This proposal was confirmed in a subsequent contact with the letter writer.
2. All of Camp Gruber is suitable for hunting except the National Guard cantonment area and the developed area at Greenleaf Lake State Park. Thus, it is true that the area available for public hunting could be enlarged.

OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION PROPOSAL



DEPARTMENT OF THE ARMY
TULSA DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 61
TULSA OKLAHOMA 74102

RECEIVED
JAN 20 1977

Ouachita
Area Supv.
D.P. Fr. Supvr.
Dist. Xgmtn. Serv.
Admin. Ser.
Engrg. Div.
Constr. Div.
Oper. Div.
Personnel
Div. Planning
Div. Rec.
Div. Tech. Ser.
Div. Water Mgt.
Exec. Asst.
OTHER STG.
Files

SWTRE-P

14 January 1977

Mr. Alvis Z. Owen
Forest Supervisor
US Department of Agriculture
PO Box 1270
Hot Springs, AR 71901

Copy of letter attached, 2 + 3 work maps to Archer 1/31/77 JL

Dear Mr. Owen:

This letter is in response to your letter of 7 December 1976 and discussion between Mr. John R. Archer of your office and Messrs. Buell Atkins and K. W. Fielder of this office, concerning the most beneficial use for the land within Camp Gruber, Oklahoma.

The lands, identified as parcels 1 thru 4 and outlined in red on the inclosed map, consist of 943.77 acres and are required in connection with the operation of the Webbers Falls Lock and Dam Pool which is a part of the McClellan-Kerr Arkansas River Navigation System. The land acquisition criteria for Webbers Falls Lock and Dam required the fee purchase of lands encompassing elevation 493 feet, with a minimum distance of 300 feet measured horizontally from the top of the permanent pool, elevation 490 feet. Parcels 1 thru 4 encompass the area required to meet the acquisition criteria. All of the land lying below elevation 490 feet has been inundated since the project was placed in operation in December 1970.

The most beneficial use for parcel 5, which contains 5,952.15 acres and is outlined in green on the inclosed map, is for the expansion of the existing recreational facilities at Greenleaf State Park. The expansion of these facilities would complement the recreational facilities that have been or will be constructed along the shores of the Webbers Falls project. The Recreation and State Parks Department of Oklahoma and their successor, the Oklahoma Tourism and Recreation Department, have expressed a continuing interest in the expansion of the park since 1965. They presently have a lease covering about 1,325 acres which includes a portion of parcel 2, as well as that part of parcel 5 located adjacent to Greenleaf Lake. They have a comprehensive plan for the expansion of these facilities to include all of the area in parcel 5, as well as a portion of parcel 2. They are at the present time expending substantial sums of money to repair the dam and spillway at Greenleaf Lake and anticipate that they will be permitted to expand onto the lands under consideration. Their expansion program has already been initiated by the construction of a hiking trail around the entire perimeter of Greenleaf Lake. Members of the Oklahoma Tourism and Recreation Department have recently indicated that they plan to contact your office and present you with their plan of expansion of the existing facilities. This office has consistently supported the expansion of the park area.

I understand that the Oklahoma National Guard has already furnished you with information concerning their use of the Camp Gruber area. In connection with the utilization of Camp Gruber for military purposes, I am inclosing a copy of letter from the Department of Defense dated 10 June 1976 which sets out their views with respect to H.R. 9344, 94th Congress, a bill "To provide for the conveyance of certain real property to the State of Oklahoma for National Guard purposes."

Sincerely yours,

JACK E. SHIELDS
Chief, Real Estate Division

3 Incl
1. Map
2. Ltr, 10 Jun 76
3. Legal desc

Mag Card 015633
PROJECT: WEBBERS FALLS LOCK AND DAM
CAMP GRUBER AREA (5 PARCELS)

PARCEL 1

INDIAN MERIDIAN
T 13 N, R 20 E
SECTION 15, All that part of Lot 5 lying East of the centerline of the Missouri Pacific Railroad, and the W½NW¼SE¼.

The area described aggregates 52.90 acres, more or less, in Muskogee County, Oklahoma.

PARCEL 2

INDIAN MERIDIAN
T 13 N, R 20 E
SECTION 3, The West 20.06 acres of Lot 3, Lot 4, SW¼NW¼, NW¼SE¼NW¼, W½SW¼.
SECTION 4, All that part of Lot 1, SE¼NE¼, E½SE¼ lying East of the centerline of the Missouri Pacific Railroad containing 109.10 acres, more or less.
SECTION 9, SE¼NW¼, E½NE¼NW¼, NE¼, N½SE¼, SW¼SE¼, NE¼SE¼SW¼.
SECTION 10, W½NW¼, S½SE¼NW¼, N½SW¼, a tract of land in the S½SW¼NE¼, N½SE¼, containing 56.82 acres, more or less, more particularly described as: Beginning at the northwest corner of said S½SW¼NE¼; thence East, along the north line thereof, 1,100.00 feet; thence Southeasterly, on a straight line, to a point on the south line of said N½SE¼, said point being 1,400.00 feet East of the southwest corner thereof; thence West, 1,400.00 feet, to said southwest corner; thence North, along the west line of said N½SE¼ and S½SW¼NE¼, 1,980.00 feet, more or less, to the point of beginning.

The area described aggregates 885.87 acres, more or less, in Muskogee County, Oklahoma.

PARCEL 3

INDIAN MERIDIAN
T 14 N, R 20 E
SECTION 8, S½SW¼SW¼NE¼, S½N½SW¼SW¼NE¼, NW¼NW¼SE¼, N½N½SW¼, N½SE¼NW¼SW¼, SW¼NW¼SW¼, NW¼SW¼SW¼, S½NE¼SE¼SE¼NW¼, S½S½S½NW¼.

The area described aggregates 103.75 acres, more or less, in Muskogee County, Oklahoma.

PARCEL 4

INDIAN MERIDIAN
T 14 N, R 20 E
SECTION 5, N½NW¼SW¼NW¼.
The area described aggregates 5.00 acres, more or less, in Muskogee County, Oklahoma.

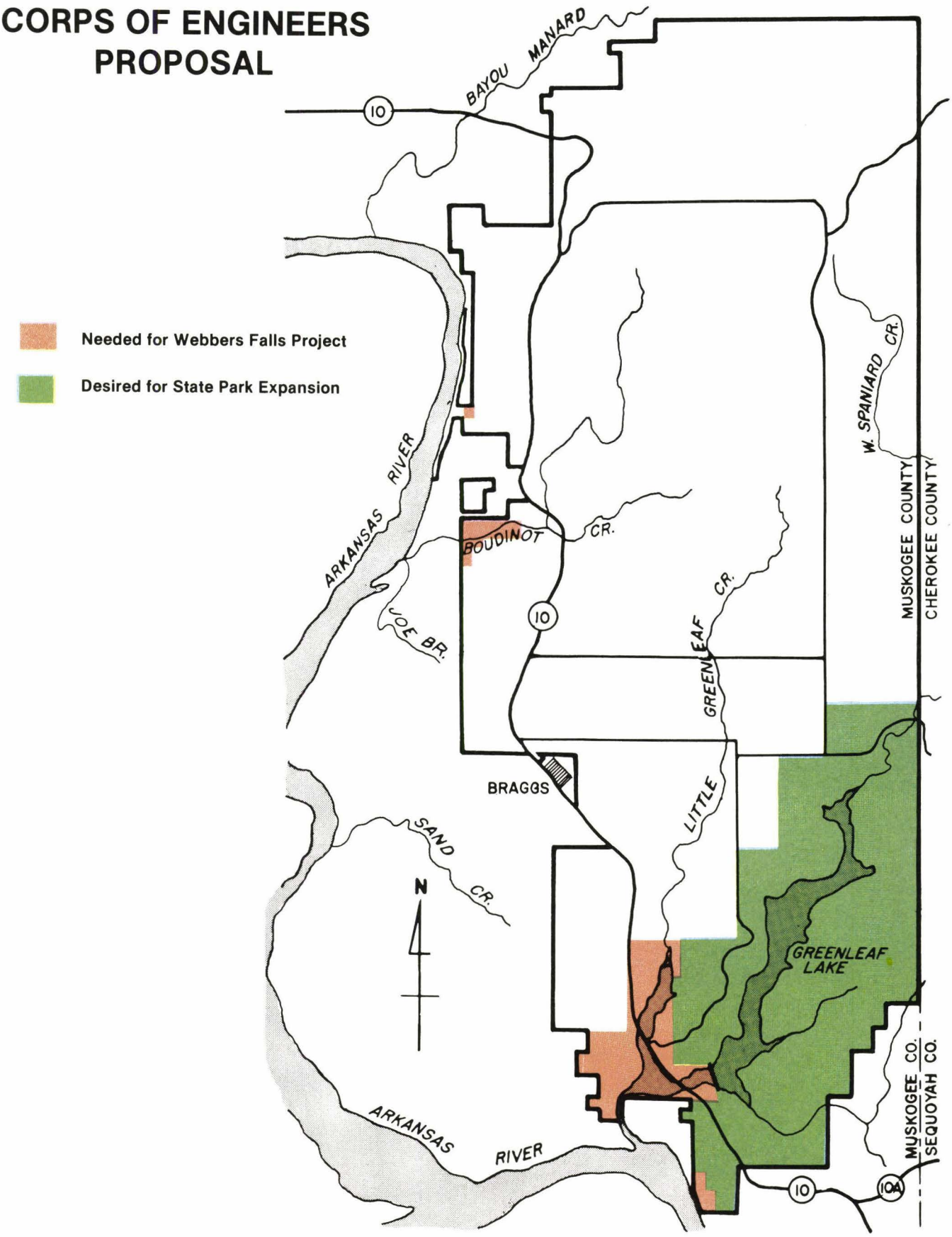
PARCEL 5

INDIAN MERIDIAN
T 13 N, R 20 E
SECTION 1, Lots 1, 2, 3, and 4, S½N½, N½SE¼, W½SW¼SE¼, SW¼.
SECTION 2, Lots 1, 2, 3, and 4, S½N½, S½.
SECTION 3, Lots 1 and 2, the East 20.06 acres of Lot 3, S½NE¼, SE¼, E½SW¼, E½SE¼NW¼, SW¼SE¼NW¼.
SECTION 10, NE¼NW¼, N½SE¼NW¼, N½NE¼, N½S½NE¼, a tract of land in the S½S½NE¼, N½SE¼, containing 63.18 acres, more or less, more particularly described as: Beginning at a point on the north line of said S½S½NE¼, said point being 1,100.00 feet East of the northwest corner thereof; thence Southeasterly, on a straight line, to a point on the South line of said N½SE¼, said point being 1,400.00 feet East of the southwest corner thereof; thence East, 1,240.00 feet, more or less, to the southeast corner of said N½SE¼; thence North, 1,980.00 feet, more or less, to the northeast corner of said S½S½NE¼; thence West, along the north line thereof, 1,540.00 feet, more or less, to the point of beginning, S½SE¼, SE¼SE¼SW¼.
SECTION 11, All.
SECTION 12, N½NW¼, SW¼NW¼, NW¼SW¼.
SECTION 14, N½.
SECTION 15, NE¼, E½NW¼SE¼, E½SE¼.

T 14 N, R 20 E
SECTION 24, S½.
SECTION 25, All.
SECTION 26, E½.
SECTION 35, All.
SECTION 36, All.

The area described aggregates 5,952.15 acres, more or less, in Muskogee County, Oklahoma.

CORPS OF ENGINEERS PROPOSAL



GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE
WASHINGTON, D.C. 20301

10 June 1976

Honorable Melvin Price
Chairman, Committee on Armed Services
House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

Reference is made to your request to the Secretary of Defense for the views of the Department of Defense with respect to H.R. 9344, 94th Congress, a bill "To provide for the conveyance of certain real property to the State of Oklahoma for National Guard purposes."

The purpose of this bill is to authorize and direct the Secretary of the Army to convey to the State of Oklahoma all right, title, and interest of the United States in 26,015 acres of land in Muskogee County, Oklahoma known as Camp Gruber, being the same property presently under license to the State for National Guard use. The bill further provides that the conveyance shall be without monetary compensation, shall be used primarily for the training and other military purposes of the Oklahoma National Guard, and that any revenue derived by the State from other uses of the property shall be used for the maintenance and improvement of the property or be shared with the United States. The bill also provides for use of the property by the Government during time of war or national emergency, for the reservation of easements and mineral rights in the Government, and for reverter of title to the Government in the event of violation of conditions.

The Department of Defense opposes the enactment of this bill.

Camp Gruber is currently comprised of 30,411 acres of land, of which 4,681 acres were acquired in fee and 25,730 acres were transferred from the Department of Agriculture by Executive Order 9282 dated December 5, 1942, subject to the return to the Secretary of Agriculture for administration under Title III of the Bankhead-Jones Farm Tenant Act (7 U.S.C. 1010-1013) when no longer needed for military purposes.

In 1959, at the request of the Bureau of the Budget, the Department of the Army, on behalf of the Department of Defense, undertook a comprehensive review and reappraisal of the Federal property support for the National Guard. Particular attention was paid in this study to the question of whether title to real property utilized by National Guard should be retained by the United States or vested in the States. The conclusion reached confirmed the fact that title to armories, armory-type facilities, and armory sites should be held by the State concerned, but that, from the standpoint of the effectiveness of National Guard training, it is immaterial whether the State holds title to non-armory facilities. Retention of title by the United States will permit, where practicable, joint utilization of non-armory facilities with the National Guard by either the active Army or the United States Army Reserve or by active or reserve components of the other armed services. It was, therefore, determined as a matter of policy that, in the absence of a clearly demonstrated requirement for the transfer of title to a State, title to non-armory facilities should be retained by the United States.

The real property proposed for transfer to the State of Oklahoma under H.R. 9344 has heretofore been made available to the State by the Department of the Army for use in connection with non-armory activities of the National Guard. Inasmuch as there are no special circumstances requiring an exception to the above-stated policy, the Department of Defense believes that the best interests of the United States will be served if title to the property involved is retained by the United States.

We are informed that, in view of the provisions of Executive Order 9282 (noted above), the Department of Agriculture intends to present its views to the Committee on H.R. 9344.

In order to clarify the record, there are actually 26,675 acres of land presently under license to the State of Oklahoma for National Guard purposes. Some of this land will be required for recreational purposes in connection with the Corps of Engineers' Webbers Falls Lock and Dam project in the immediate area. In addition, pursuant to a resolution by the United States Senate Committee on Public Works dated 26 March 1971, the Corps of Engineers is currently involved in conducting a study as to whether any lands in the Oklahoma Unit should be included within a National Recreation Area system.

While the full fiscal effect of this measure cannot be readily ascertained, enactment might, in the event joint utilization becomes feasible at a later date, necessitate acquisition of substitute facilities for the training of other Army elements.

This report has been coordinated within the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Office of Management and Budget advises that, from the standpoint of the Administration's program, there is no objection to the presentation of this report for the consideration of the Committee.

Sincerely,

Richard A. Wiley

Copy furnished:
SWD
Fort Worth District
DAEN-RFM

Corps of Engineers

Proposal

A. Continued use of Parcels 1-4 is required for Webbers Falls Lock and Dam.

Study Team Comments

1. Most of the subject lands have been irreversibly committed to this purpose.
2. The legal description of the four parcels is written in a manner which simplifies their exterior boundaries. In so doing, the parcels include shoreline lands which aren't actually dedicated to the Arkansas River Navigation System. It also fails to include a long narrow strip adjacent to Parcel 4 which should also be committed to the project.
3. The entrance to Greenleaf Lake State Park is on Parcel 2.
4. An alternative to including excess shoreline lands and to including the entrance to Greenleaf Lake State Park in the four parcels would be to retract the boundaries to those lands actually needed for the Arkansas River Navigation System.
5. All Corps-operated recreation facilities at Camp Gruber are located on Parcel 2.

B. Parcel 5 should be made available for future expansion of Greenleaf Lake State Park.

1. This would dedicate over 4,000 more acres to primary recreation use, adding to the 1,326 acres presently licensed for that purpose.
2. New area is all Title III lands.
3. New area is suitable for various types of dispersed recreation.
4. Size of expansion area might be reduced to allow hunting and other activities not ordinarily permitted in developed recreation areas.

DAVID L. BOREN GOVERNOR
GEORGE NIGH LT. GOV. - CHAIRMAN

Oklahoma Tourism and Recreation Department

500 WILL ROGERS BUILDING
OKLAHOMA CITY 73105

RECEIVED
FEB 7 1977

February 3, 1977

Mr. Alvis Z. Owen, Forest Supervisor
United States Department of Agriculture
Forest Service
Ouachita National Forest
Post Office Box 1270
Hot Springs, Arkansas 71901

Dear Mr. Owen:

Re: 5540 Camp Gruber Land Use Proposal

Enclosed please find copies of our Oklahoma Tourism and Recreation Department planning documents for Greenleaf State Park, Camp Gruber and Webbers Falls.

We feel these areas have significant recreational value as denoted in our ongoing expenditure plan and future development proposals. The Greenleaf and Gruber trails for hiking and moto-cross experiences have also been endorsed by the Governor's Office and the Oklahoma State Comprehensive Outdoor Recreation Plan as top priority developments.

The development of these areas will not only meet an expressed need for hiking and motorcycle trails, but will also provide additional areas for recreational vehicle camping. The expansion of the campgrounds at Greenleaf State Park is necessary to relieve congestion by increasing campground facilities.

Mr. John Archer has provided our office with the soil and survey information obtained in Phase I of your study. We very much appreciate this information, and hope our plans will be of assistance to you in the completion of Phase II.

If further information is necessary, please contact either me or Kirk Breed, Planning and Development Division, 4020 North Lincoln.

Sincerely yours,

Abe L. Hesser
Executive Director

ALH:ni

OKLAHOMA TOURISM & RECREATION CONFERENCE 77

OKLAHOMA! STATE OF MANY COUNTRIES

DIRECTIONS

February 23-24/77
Oklahoma City

42

Oklahoma Tourism and Recreation Department

Proposal

A. Develop the proposed Greenleaf Trail.

Study Team Comments

1. The land is highly suitable for this type of development.
2. The trail would go through an area used by the National Guard for river crossing training.
3. The trail would go through an area highly desirable for public hunting. These uses would be compatible.

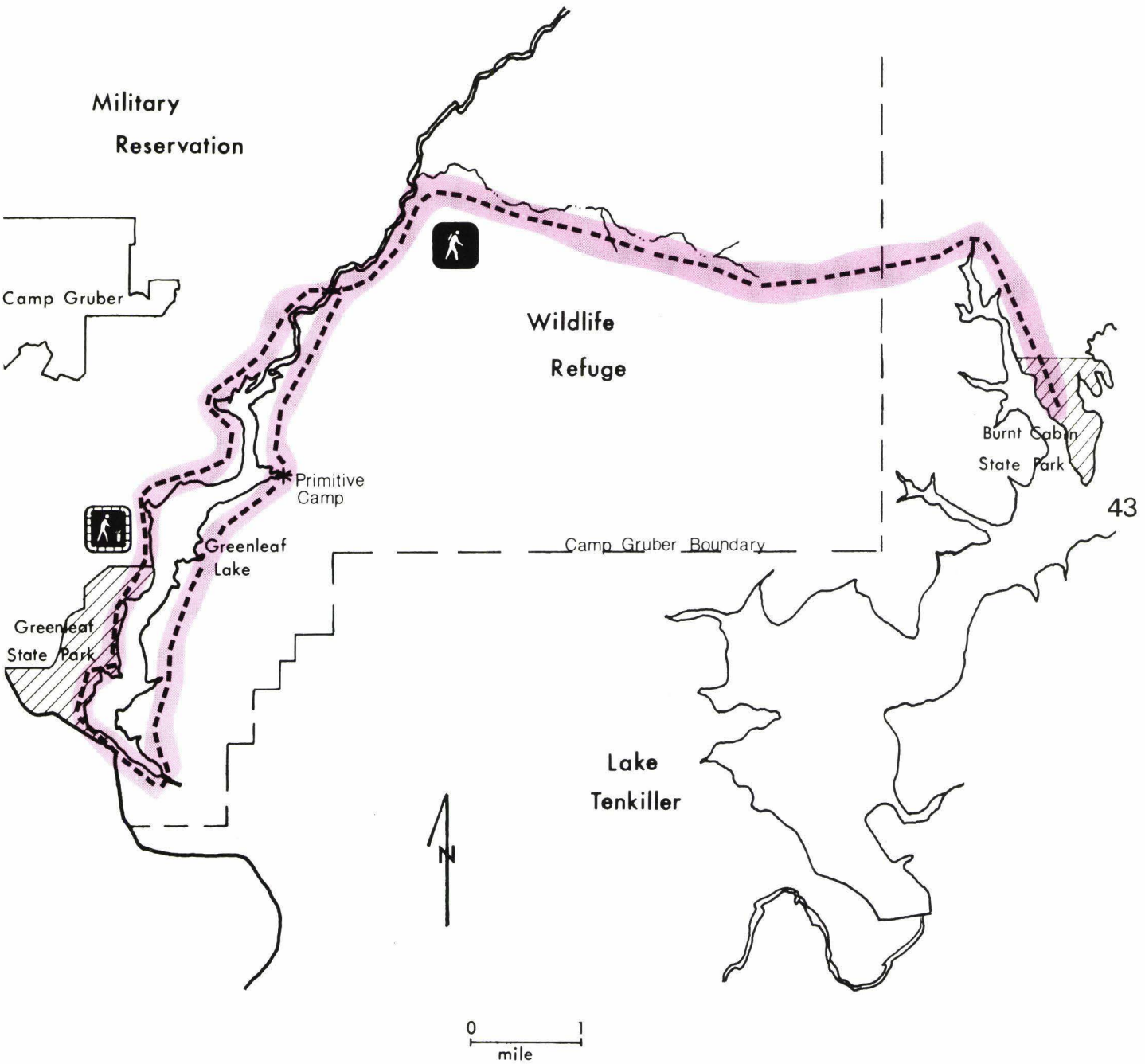
B. Develop a motorcycle park in conjunction with the adjacent state owned lands.

1. Much of the area already receives uncontrolled motorcycle use.
2. The 455.49 acre tract recently acquired by the state has not been developed to its potential as a motorcycle park.
3. Soil erosion will occur on steeper land if trails are not properly located. Otherwise, most of the area is suitable for this use.
4. There could be a conflict with wildlife habitat for some species.

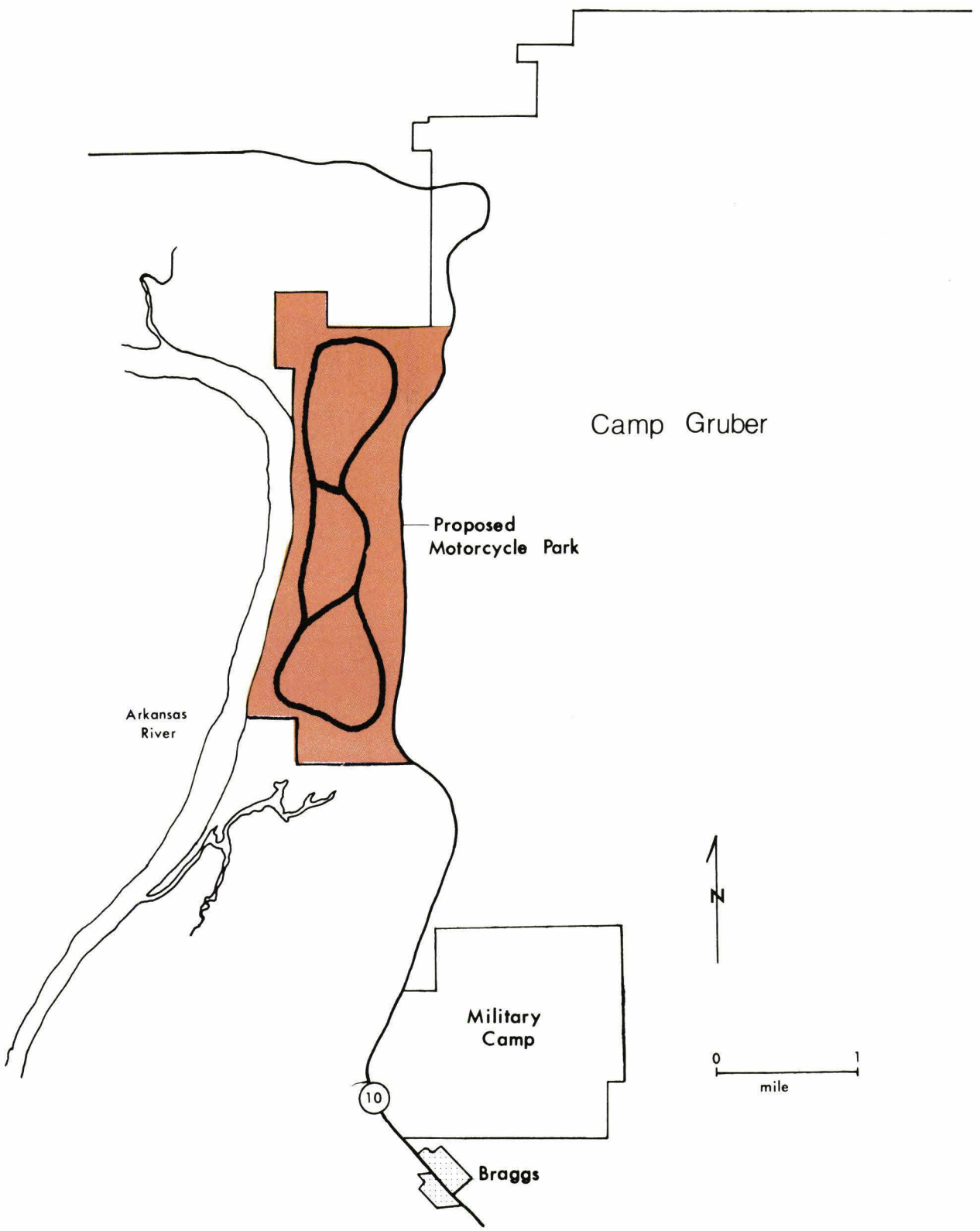
C. Improve the existing State Park.

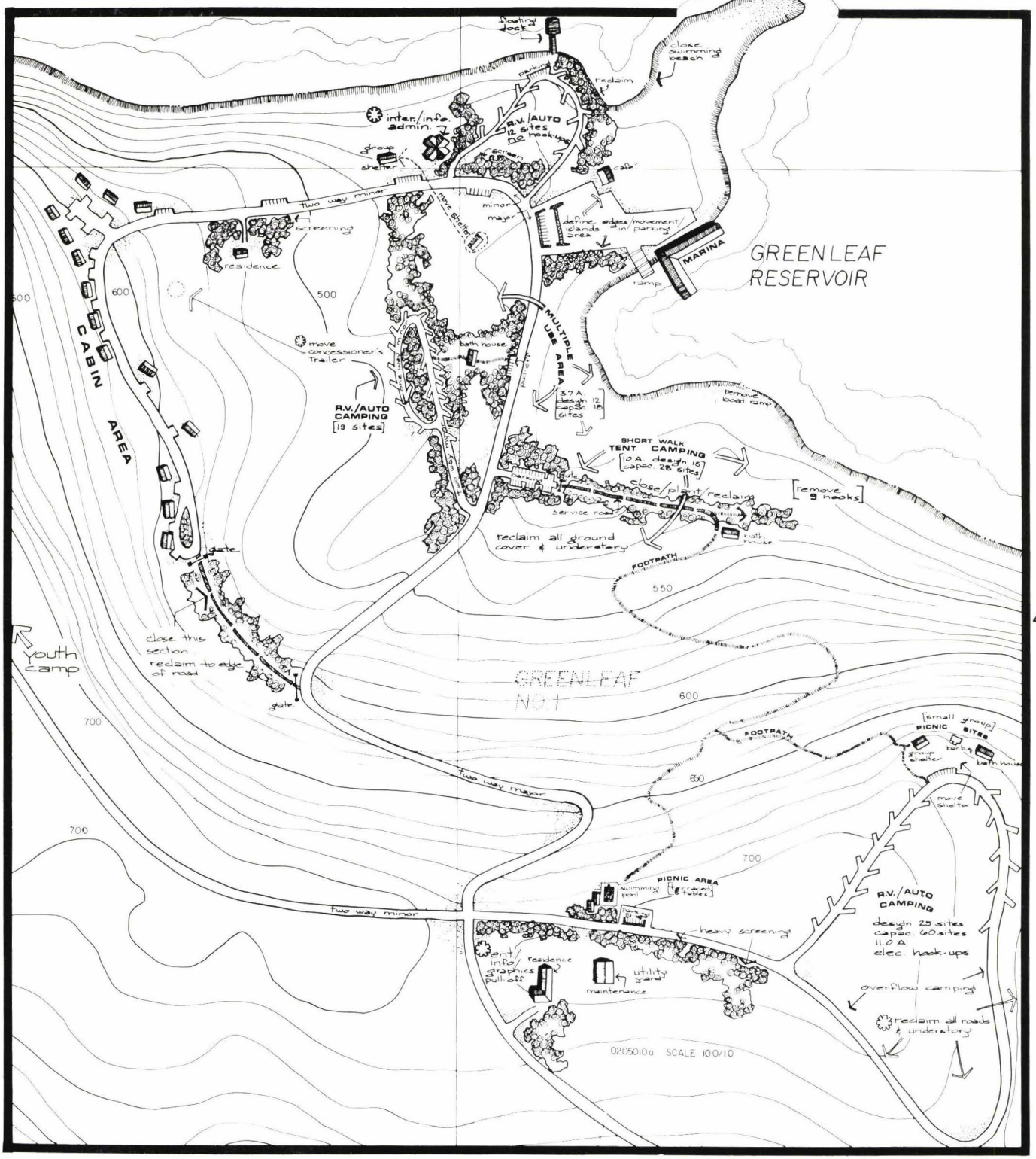
1. Improvement and maintenance of existing area are needed more than large scale expansion.
2. The state must either have title to the State Park lands or have a long term lease in order to qualify for federal recreation development funds.

CAMP GRUBER - GREENLEAF TRAIL



CAMP GRUBER
MOTORCYCLE PARK





GENERAL PLAN FUNCTIONAL ABSTRACT

GREENLEAF BACKPACKER TRAIL

GENERAL PLAN

The proposed Greenleaf Trail will consist of two major trail routes: A perimeter trail around Greenleaf Lake and a Cross-country trail from Greenleaf to Burnt Cabin Recreation Area on Tenkiller Reservoir. The Greenleaf Trail will be an estimated 25 miles in length, featuring several rest areas and a primitive camp ground. The Burnt Cabin Trail will extend approximately 10 miles across the Gruber Wildlife Refuge. Like the Greenleaf Trail, Burnt Cabin will be designed solely for backpacker use.

ESTIMATED COST

-Materials-		
Signs	$2,000	
Bridges	$1,000	
Primitive Campground	$2,000	
Subtotal		$ 5,000
-Labor-		
Estimated 1800 man/hours		
@$2.75	$5,000	5,000
Total		$10,000

CAMP GRUBER MOTORCYCLE PARK

GENERAL DESCRIPTION

The area recommended for trail bike development is currently classified as federal excess land. Except for a 451 acre tract which is under deed to the State Parks Department, the remainder of the roughly 3,800 acres unit is administered by the Corps of Engineers. At present, the land is principally used for grazing (private lease agreements), public hunting, and as a popular, but unmanaged, area for motorcycle riding.

Large portions of the tract are densely vegetated with hardwoods and thick, scrub species. The terrain is typically rock strewn with a steep ridgeline overlooking the Arkansas channel. In many areas, the only open space is the result of power line construction or sand pit operation.

Recent years have been marked by the increasing use of the area by cycle enthusiasts. Through their own efforts, a series of enduro-courses have been laid out, and one 50-mile route is reportedly among the country's most challenging runs. Recognizing the growing popularity of cycling, as well as the problems which result from their uncontrolled use, it is recommended that a portion of this Camp Gruber Tract be set aside and managed specifically for this form of recreation.

GENERAL PLAN

It is recommended that initial development focus on three work elements: the improved signing of the existing enduro-course; construction of a mini-bike area; and the provision of a new trail network, separate from the competetive track, for novice and general cycling use.

ESTIMATED COST

-Signing Enduro-Course	$2,000
-Mini-bike Course	$4,000
-General-Use Trail	$4,000
	$10,000

GREENLEAF STATE PARK

A major regional recreational facility catering principally to the needs of those desiring to spend reasonably long camping periods in a quiet natural resource oriented setting. The type of user generally has a recreational vehicle and tends to be in or approaching the retired part of his or her life. The small picnic day-use area is incidential to the theme serving only local needs. The park is situated on a valley slope facing a clear fishing lake and basically developed to its maximum capacity given its quiet camping theme. A youth camp is an appropriate peripheral use and cabins offer an additional long stay opportunity.

Southern Cherokee County 25 miles southeast of Muskogee in Eastern Oklahoma.

Park is adjacent to a large number of recreational areas along the Arkansas River sponsored principally by the Corps of Engineers. It is within a few miles of Lake Tenkiller, Camp Gruber and recreational facilities on the southern end of Fort Gibson Reservoir. The region is intensively developed with park sites of varying themes thus allowing the strong establishment of the quiet camping park theme at Greenleaf.

FUNCTIONAL ABSTRACT (See Figure)

GENERAL PLAN (See Figure)

1. Hilltop Area/Entrance Youth Camp area should be elevated by a specific design program. Provide an entrance/graphics information pull out near residence before first intersection, berm and strongly screen residence and utility area from path users. Screen the swimming pool area from road, construct a paved and edged parking terrace for 12-15 cars with consideration for one bus (Youth Camp). Construct terraced picnic sites (5 tables) adjacent to pool (pool is a very poorly placed facility). Pave and define pull outs with electrical hook ups for 15 R.V./Auto campsites on loop. (The capacity of the loop is approximately 60 spaces which serves as the only area capable of being expanded to meet future needs). Provide a paved 10 space pull out for group picnics at the loop shelter and bathhouse area. Move shelter to outside of loop and provide a native stone facia to bathhouse and shelter poles. Construct a well surfaced and stepped (logs and stone, etc.) trail as shown to base areas.

2. Lower Camping Area Construct, edge and pave two R.V./Auto Camping loops and pull outs as shown (Central loop with electrical hook-ups - 19 sites and the lakeside loop without hook-ups - 12 sites). Move group shelter (inside loop) to shore area near the interpretive/information center. Move the concessionaires mobile home away from the public use areas. Construct parking area for 20-25 cars at the base of the hill on the south side of the road to support 15 designated walk-in tentsites. Provide paved parking pull outs along principal loop to support general picnicking or camping on reclaimed grassy slopes along shoreline (no development in these areas only). Place stone facias on all concrete block structures. Plant and screen use clusters and residences. Close, plant, reclaim all roads not designated. Remove 9 hook ups from tent camping area and remove boat ramp on west shore. Rehabilitate marina structure with natural treated wood (as opposed to silver corrogated sheet metal). Edge, channel, and plant in and around large, open cafe parking area. Rehabilitate large WPA stone structure north of cafe to rustic information and program-interpretive center. Develop small permanent beach area with safe docks. Remove old deteriorated equipment.

3. Cabin Area Landscape all cabins with stone and native shrubs. Edge and pave cabin pull outs. Reclaim edge of cabin road to sheltered intimate scale. (Cabins need to be re-examined as individual units in terms of providing a rustic experience). Close cabin loop road beyond the last cabin to walking only and channel traffic back past the administrative building in the lower area of the park.

PRIORITIES

A. PAVEMENT and EDGING of all auto surfaces, pull outs, and parking areas as noted - CLOSURE, RECLAMATION, SCREENING and PLANTING as noted - movement of needed structures and hook-ups and installation of balance of DESIGNATED HOOK-UPS AND SITE IMPROVEMENTS such as tables and grills in cases where their movement from other areas still does not adequately equip a designated camping area.

B. BEACH IMPROVEMENTS, WPA STRUCTURE REHABILITATION, TRAILS, CAFE PARKING LOT IMPROVEMENTS, ENTRANCE GRAPHICS.

C. MARINA REHABILITATION, relocation of concessionaire trailer (north of loop residences near cabins).

D. CABIN IMPROVEMENTS-LANDSCAPING.

FACILITIES CHART

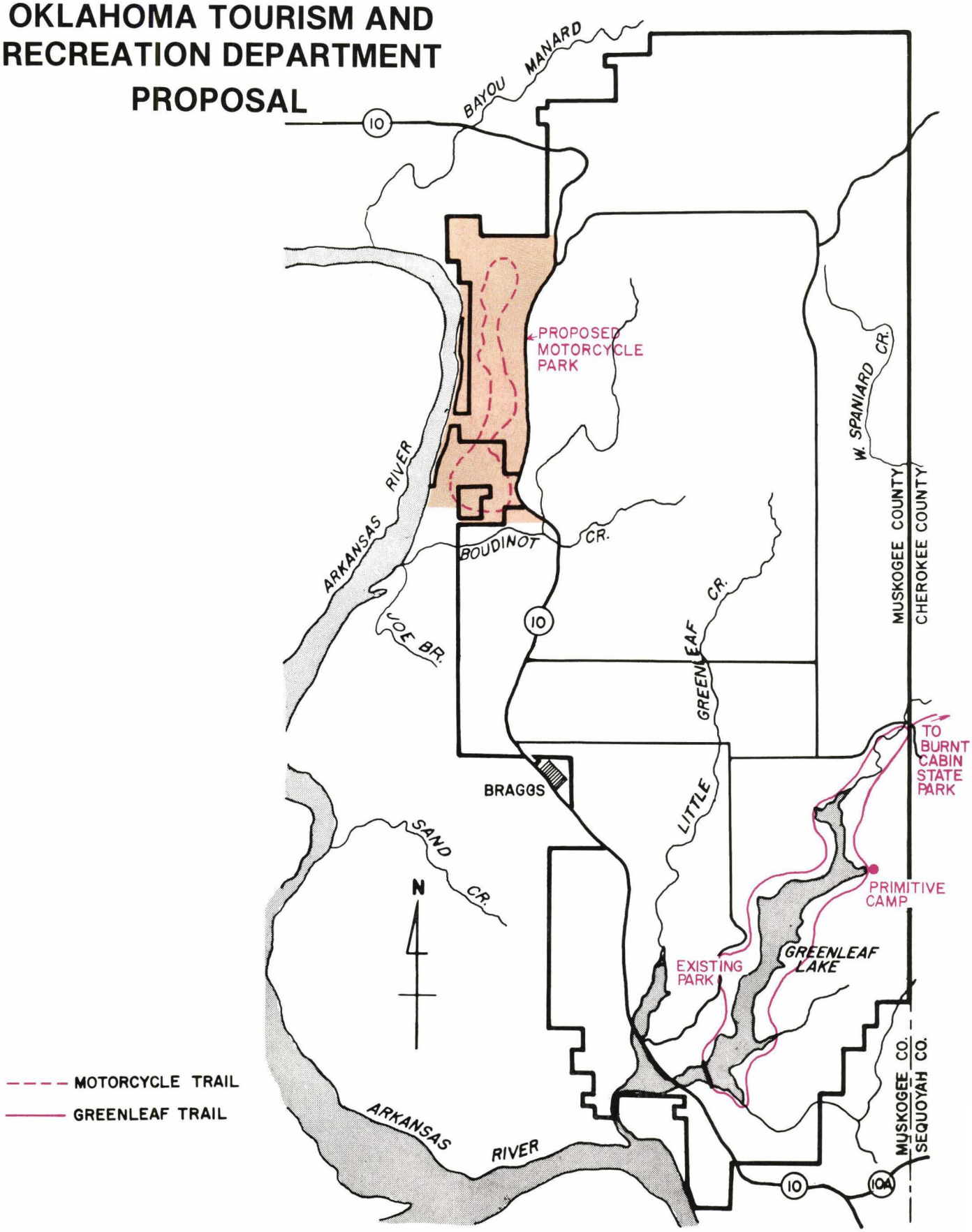
	Acreage	Linear Footage	Capacity	Design
Picnic Sites	3.7	-	18	12
Tent Sites	7.0	-	28	15
R.V. Sites	3.5	-	44	44
Mult. Use	11.0	-	47	12
Closed Roads	-	700 Paved 3600 Dirt 4300 Dirt	-	-
Reclaim Areas	9	-	-	-
Planting (Screening)	3	-	-	-

*HIGH DENSITY EXISTING TRAILER COURT

ADDITIONAL COMMENTS

There is a very large amount of public lands in this region. Much of it should be added to the existing park to protect the integrity of its scale and theme. Expansion areas should be treated as a natural setting to be penetrated only by non-motorized conveyances. Linkages such as foot trails should be explored between the Greenleaf area and other recreational sites serving other themes and intensities of development (i.e. Tenkiller, Webers Falls area, Camp Gruber, etc.) With the exception (as previously noted) of the upper loop there must not be any additional expansions or provisions for recreational opportunities not in keeping with the present intensities and scales. Additional monies should be spent only to enhance the setting and reduce the obtrusiveness of the developments and accommodations thereon. Developments of the Five Year Plan above noted must keep in mind the general preponderance of elderly recreationalists at the site.

OKLAHOMA TOURISM AND RECREATION DEPARTMENT PROPOSAL



MUSKOGEE
CHAMBER OF COMMERCE, INC.
P. O. BOX 797 ■ A. C. 918/682-2401 ■ MUSKOGEE, OKLAHOMA 74401

February 8, 1977

Mr. Alvis Z. Owen, Forest Supervisor
Quachita National Forest
U. S. Forest Service, USDA
P. O. Box 1270
Hot Springs, Arkansas 71901

Dear Mr. Owen:

We very much appreciate the opportunity to comment on the preliminary proposals in your study of Camp Gruber as set forth at the January 21, 1977, meeting arranged by the Eastern Oklahoma Development District in Muskogee. It appears that the study will be another major contribution toward finding a desirable solution for the future use and management of that land.

It must be recognized that the land constitutes a major natural resource for the State of Oklahoma, particularly the entire northeast part of the state, and possibly the entire region. Finding appropriate uses and management techniques for this important natural resource requires consideration of all possibilities: recreation, including hunting and park use, military training, agriculture and industrial development. It seems apparent that such multiple uses are compatible and will be beneficial to the entire area.

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We recognize that recreational uses are desirable to us as individuals and as a major industry in its own right. Moreover, the availability of adequate recreational resources in the area can be a substantial attraction to industries considering location here. The availability of more than 32,000 acres in Cherokee County and the proposed permanent allocation of more than 20,000 acres in Muskogee County to wildlife conservation uses, approximately five-sixths of the original Camp area, amply attests to the importance attached to these uses. In addition, approximately 6,000 acres is or would be devoted under these proposals to permanent park and recreation use. Therefore, at the same time, it would appear that the assignment of all available land at

Copy to Archer 2/18/77

Camp Gruber to such uses would be a selfish and unwise commitment of this major natural resource.

We also suggest that consideration be given to permanently setting aside a substantial tract as a permanent base for agricultural research. Specifically, research conducted by the Oklahoma State University can be expanded to use some of the areas proposed for industrial development until or unless those uses materialize. There is a need for and a desire to expand reaserch into cattle grazing conditions which would be typical for Eastern Oklahoma. About 1,200 acres south of the old Cantonment area and east of Braggs would apparently be ideal as the permanent base for this research.

While substantial areas of private land and industrial sites are available for industrial development in this part of Oklahoma, they mostly tend to be relatively smaller tracts in proximity to developed areas. There is a desperate shortage of substantially sized tracts remote from developed areas, but with good access to transportation, water and electric power. Camp Gruber has several ideal sites for such purposes. Only through the availability of such sites can we continue to attract industry and furnish decent jobs for the citizens of this area.

We believe your study has made a major contribution by identifying four of these. We would like to endorse three of those suggestions. The future may suggest expansion or contraction of the actual size of these areas, but we believe they are an adequate representation of the necessary size and location of desirable industrial areas. We believe the recommended management alternative should allow for "trading" among the sites allocated for different uses. For example, the "river-front" park site already deeded to the State might be exchanged for additional land around the upper end of Greenleaf Lake or be arranged in a more conveniently managed block, taking advantage of steeply rolling topography rather than its present extensive railroad frontage. Such recreation land could provide for the now well-established, but still informal motorcycle sport use with better management controls than now exist. Another example would be the possible extension of the Sand Hills Area 3 site as far south as possible to allow a dredged connection to the adjacent waterway.

It appears, however, that Area 4, especially the watershed into Greenleaf Lake on its eastern side, should be permanently set aside for wilderness, back-packing type recreation use. However, any industrial designation

to be studied in this area should only include the high plateau centering in the eastern two-thirds of section one (1) extended south to come as close as possible to Highway 10 to allow for better access.

Our most strongly felt suggestion is that a fifth industrial area of about 2,500 acres be designated around the old Cantonment area. This area has been suggested by two leading engineering authorities as the prime industrial site in the entire Camp area. This area with its old paved roads and foundations is of very limited value for any other use. In the past representatives of the National Guard have indicated their willingness to "trade" their present sites in this area for sites in other areas, assuming that a prospective industrial user would reimburse them for their investment in buildings and facilities so that they could be rebuilt in other parts of the Camp. A possible allocation of land in another part of the Camp should be identified by discussion with the National Guard.

Finally, we suggest that your study discuss the interim use of the industrial land, which we suggest be simply reserved or "earmarked' for industrial use, until or if such uses materialize. We think grazing research, hunting, wildlife refuge, military training, motorcycle recreation uses could all be continued until industrial uses actually materialize. However, it is imperative that a clear and certain title for industrial use be readily available so that a prospective industry has assurance that no legal or land impediments for a plant would materialize.

A map illustrating these suggestions is attached for your convenience. The purpose of this map is simply to illustrate and clarify our suggestions and is not necessarily an accurate representation to scale.

We understand that a number of management alternatives have been discussed with your representative by a representative of Senator Bellmon. At this time, we are unable to recommend one among those alternatives, although we share Senator Bellmon's belief that federal legislation will ultimately be necessary to clarify the present land status and provide the necessary assurances of land title and a basis for multiple use management, including authority for possible exchanges of different sites for different uses.

Thank you for the opportunity to provide these comments.

Sincerely,

For the Chamber of Commerce

Mr. Bill Kaad, President

For the Greater Muskogee Development Corporation

Mr. Hayes Holliday, Chairman

For the Committee of "26" of the Chamber of Commerce Concerning the Future of Camp Gruber

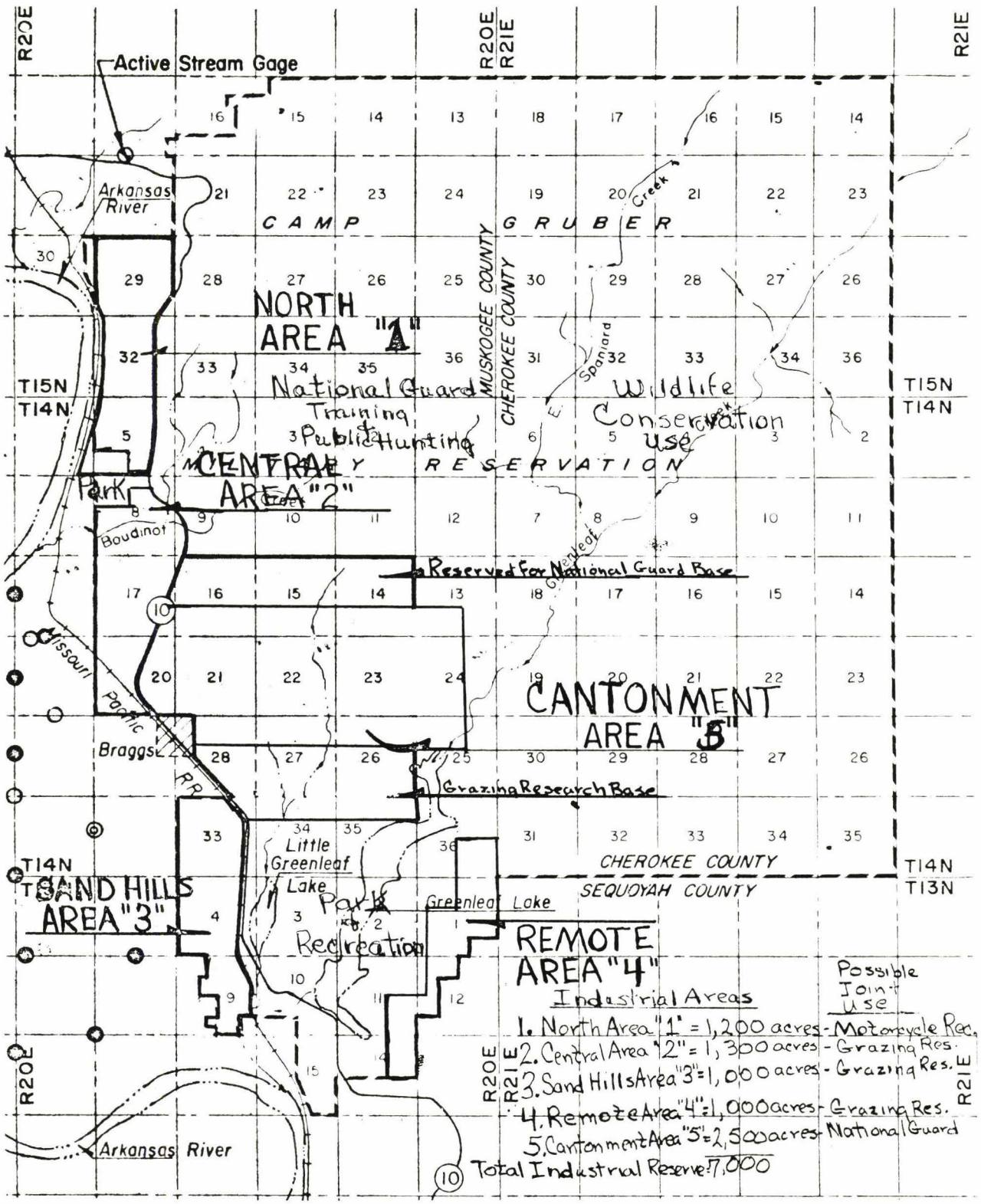
Mr. John Lewis Stone
Co-Chairman

Mr. John T. Hannah
Co-Chairman

Attachment: Map

Copies:

Senator Henry Bellmon
Senator Dewey Bartlett
Representative Ted Risenhoover
Governor David Boren
Mr. Scott Eubanks, Industrial Development
Mr. George Wint, Department of Wildlife
Dr. Ave Hesser, Tourism and Recreation
Maj. Gen. John Coffey, Jr., Oklahoma National Guard
Dr. William Talley, ODPC
Mr. Larry Sand, EODD
Mr. Richard Hall, Forest Service, USDA Washington
Col. Anthony Smith, Tulsa District, Corp of Engineers
Dr. Frank Baker, OSU
Mr. E. C. Thompson


R20E
R21E
Active Stream Gage
Arkansas River
CAMP GRUBER
MUSKOGEE COUNTY
CHEROKEE COUNTY
NORTH AREA "1"
National Guard Training
Public Hunting
Wildlife Conservation Use
RESERVATION
CENTRAL AREA "2"
Park
Boudinot
Reserved For National Guard Base
CANTONMENT AREA "5"
Missouri Pacific RR
Braggs
Grazing Research Base
Little Greenleaf Lake
Park & Recreation
Greenleaf Lake
CHEROKEE COUNTY
SEQUOYAH COUNTY
SAND HILLS AREA "3"
REMOTE AREA "4"
Industrial Areas
Possible Joint Use
1. North Area "1" = 1,200 acres - Motorcycle Rec.
2. Central Area "2" = 1,300 acres - Grazing Res.
3. Sand Hills Area "3" = 1,000 acres - Grazing Res.
4. Remote Area "4" = 1,000 acres - Grazing Res.
5. Cantonment Area "5" = 2,500 acres - National Guard
Total Industrial Reserve 7,000
T15N
T14N
T13N

Muskogee Chamber of Commerce

Proposal

A. Supports permanent allotment of large acreage to wildlife conservation and park and recreation purposes, but doesn't think entire area should be devoted to these purposes.

Study Team Comments

The map attached to the Chamber of Commerce proposal divides Camp Gruber into use zones, some of which correspond to present use.

B. Set aside approximately 1,200 acres south of the cantonment area as a permanent base for agriculture research by Oklahoma State University.

1. Camp Gruber has a valuable forage resource.
2. Range management research would be in keeping with the Bankhead-Jones Farm Tenant Act.
3. This proposal could be coordinated with other uses and conducted on federal land under a license or special use permit.
4. The Guard's proposed airfield extends into this area.

C. Designated industrial sites should be managed so as to allow for trading among sites when actually needed for industrial development.

1. EODD projections show need for only approximately 1,000 acres of new industrial sites by year 2000, so not all sites analyzed should be set aside at this time.
2. Proposal seems valid in the sense that it proposes flexibility in site selection.

D. The cantonment area be set up as a future industrial site and the National Guard facilities be moved elsewhere in Camp Gruber.

1. This fifth site was analyzed and received the best suitability rating of any Camp Gruber site.
2. Chamber of Commerce comment about many old roads and building foundations limiting other uses is valid.
3. The Guard has future construction plans for a small portion of this area. There is room for both uses, however.

E. Proposed industrial sites should be managed for multipurpose use (motorcycle use, grazing research, hunting, wildlife refuge, military training and recreation) until actually needed for industrial development.

This is a good suggestion for any area set up as a future industrial site.

F. Clear and certain title be available for industrial sites when needed.

The Secretary of Agriculture has authority to make land exchanges.

G. Map shows 7,000 acres to be placed in an industrial reserve, with suggested joint or interim use.

1. Too much land, based on EODD projections.
2. Interim or joint uses suggested are good, though wildlife conservation could be a use for all 7,000 acres, in addition to the suggested use.

H. Map shows Guard relocated to area north of present cantonment area.

Too much acreage allotted for National Guard permanent facilities.

Copy to J Baker
2/25/77 JT

RECEIVED
FEB 25 1977

Oklahoma State University

College of Agriculture / Agricultural Experiment Station

STILLWATER, OKLAHOMA 74074
~~(405) 372-6211 - Ext. 266~~
624-5398

Ouachita N.F.
Dist. Ranger
Dist. Clerk
Dist. Maint. Insp.
Admin. Tech.
B. S. F.
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Dir. T.&E. Ser.
Area Ranger
Secr.
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February 23, 1977

Mr. Alvis Z. Owen
Forest Supervisor
U.S. Forest Service
P.O. Box 1270
Hot Springs, AR 71901

Dear Mr. Owen:

Dean Baker has asked me to respond to your letter of February 15, 1977, regarding possible use of some of the Camp Gruber lands for agricultural research purposes.

Earlier we had looked at this area as a possible site for cultivated crops research, and concluded that it was not suited for that purpose. We took another look several weeks ago with the thought of possible use for Range Management Research. We feel that some of the area offers an excellent possibility for this.

We are, therefore, requesting consideration for the use of 1,200 to 2,000 acres of the Camp Gruber land for Range Management Research by the Oklahoma Agricultural Experiment Station. The area east of Braggs in parts of Sections 26, 27, 28, and possibly 34 and 35 would make an excellent site for this type of work.

Our agricultural advisory committees in this part of Oklahoma have indicated a need for cow-calf management and pasture improvement research. The area indicated above lends itself well to an overall Range Management Research project which would include elements of pasture management and improvement, cow-calf management, and control of ticks and other external parasites on beef cattle and deer.

Currently, we are conducting tick research in other areas of Camp Gruber in cooperation with the Oklahoma Department of Wildlife Conservation.

We appreciate your consideration of this request and will be happy to furnish details of research plans when you desire them.

Sincerely yours,

James A. Whatley

James A. Whatley
Associate Director
Agricultural Experiment Station

JAW/kb

52

Oklahoma State University

Proposal

Would like to use 1,200 to 2,000 acres for range management research.

Study Team Comments

This is a new proposal which had not been publicly discussed prior to the public meetings sponsored by EODD. This proposal is also recommended by EODD and the Muskogee Chamber of Commerce. See comments made about the Chamber of Commerce proposal.

Eastern Oklahoma Development District

P. O. Box 1367 Telephone 682-7891

Muskogee, Oklahoma 74401

March 29, 1977

Alvis Z. Owen, Forest Supervisor
Quachita National Forest
U. S. Forest Service, USDA
P. O. Box 1270
Hot Springs, Arkansas 71901

ATTENTION: Mr. John Archer

Dear Mr. Owen:

Enclosed are the following:

1. Attendance sheets for two local meetings held on future use of Camp Gruber lands.
2. A letter from the Muskogee Chamber of Commerce summarizing their views.
3. A resolution from EODD Board of Directors summarizing local recommendations to that date.
4. A colored map illustrating the recommendations.

These recommendations and views in no way represent the views of the Governor of Oklahoma or various state agencies of Oklahoma. They were not intended to when we began arranging local meetings.

Rather, I would expect state and local government agencies to work cooperatively to refine the recommendations sent to you in this package for the benefit of all of Oklahoma.

RECEIVED
MAR 31 1977
Ouachita N.F.

Respectfully submitted,

Larry D. Sand
Executive Director

LDS:hb
Enc.

all enclosures w/copy of letter sent to Archer 4/1/77 LS

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Serving Adair, Cherokee, McIntosh, Muskogee, Okmulgee, Sequoyah, and Wagoner Counties in Oklahoma

RESOLUTION NO. 77-18

A RESOLUTION BY THE BOARD OF DIRECTORS OF THE EASTERN OKLAHOMA DEVELOPMENT DISTRICT ASSOCIATION RECOMMENDING CERTAIN FUTURE USES OF THE MUSKOGEE COUNTY PORTION OF THAT LAND KNOWN AS CAMP GRUBER, OKLAHOMA, CONTAINING APPROXIMATELY 33,248 ACRES

WHEREAS, the U.S. Forest Service, under provisions of Title III of the Bankhead Jones Farm Tenant Act is directed to develop a program of land conservation and utilization for best future use of the 33,248 acres in Muskogee County known as Camp Gruber, said lands acquired under that Act and additional lands acquired by the U.S. Army subsequent thereto; and

WHEREAS, the Eastern Oklahoma Development District Association has hosted meetings on January 21, 1977, and on February 9, 1977, for purposes of soliciting local input toward preparing a local alternative for the future use and management of said lands; and

WHEREAS, a wealth of information was considered at said meetings, including current users and their relations to soils capabilities, vegetation, geology, erosion areas, grazing characteristics, recreation, and other pertinent data.

NOW, THEREFORE, BE IT RESOLVED THAT THE BOARD OF DIRECTORS OF THE EASTERN OKLAHOMA DEVELOPMENT DISTRICT ASSOCIATION DOES HEREBY RECOMMEND THAT THE U.S. FOREST SERVICE AND OTHER COOPERATING AGENCIES CHARGED WITH THE RESPONSIBILITY OF PREPARING A FUTURE USE PLAN FOR THE 33,248 ACRES IN MUSKOGEE COUNTY KNOWN AS CAMP GRUBER CONSIDER TO THE MAXIMUM EXTENT FEASIBLE THE FOLLOWING USE FOR SAID LANDS, AS ILLUSTRATED ON THE ATTACHED MAP AND AS DESCRIBED IN THE ATTACHED LETTER FROM THE MUSKOGEE CHAMBER OF COMMERCE:

LONG TERM PRIMARY USE

	ACRES
Wildlife Management	19,248
Tourism - Recreation	5,800
Animal Science Research	1,200
Future Industrial	6,000
Corps of Engineers	1,000
TOTAL	33,248

INTERIM USE

	ACRES
Wildlife Management	26,448
Tourism - Recreation	5,800
Corps of Engineers	1,000

JOINT USE

	ACRES
Wildlife Management a) Oklahoma Guard b) Grazing	19,248
Wildlife Management a) Animal Science Research b) Future Industrial	7,200
Tourism - Recreation	5,800
Corps of Engineers	1,000

FURTHER BE IT RESOLVED THAT PRIMARY RESPONSIBILITY FOR LAND MANAGEMENT BE VESTED WITH THE OKLAHOMA WILDLIFE DEPARTMENT FOR INTERIM USES INCLUDING THOSE FOR THE OKLAHOMA NATIONAL GUARD, THE ANIMAL SCIENCES RESEARCH, AND THE FUTURE INDUSTRIAL, SAID PARCELS CONTAINING APPROXIMATELY 26,448 ACRES; PRIMARY RESPONSIBILITY FOR LAND MANAGEMENT OF LAND NEEDED FOR THE WEBBERS FALLS LOCK AND DAM, APPROXIMATELY 1,000 ACRES, BE VESTED WITH THE U.S. ARMY CORPS OF ENGINEERS; AND PRIMARY RESPONSIBILITY FOR LAND MANAGEMENT OF LAND NEEDED FOR TOURISM-RECREATION IN THE GREENLEAF LAKE AREA BE VESTED WITH THE OKLAHOMA DEPARTMENT OF TOURISM RECREATION.

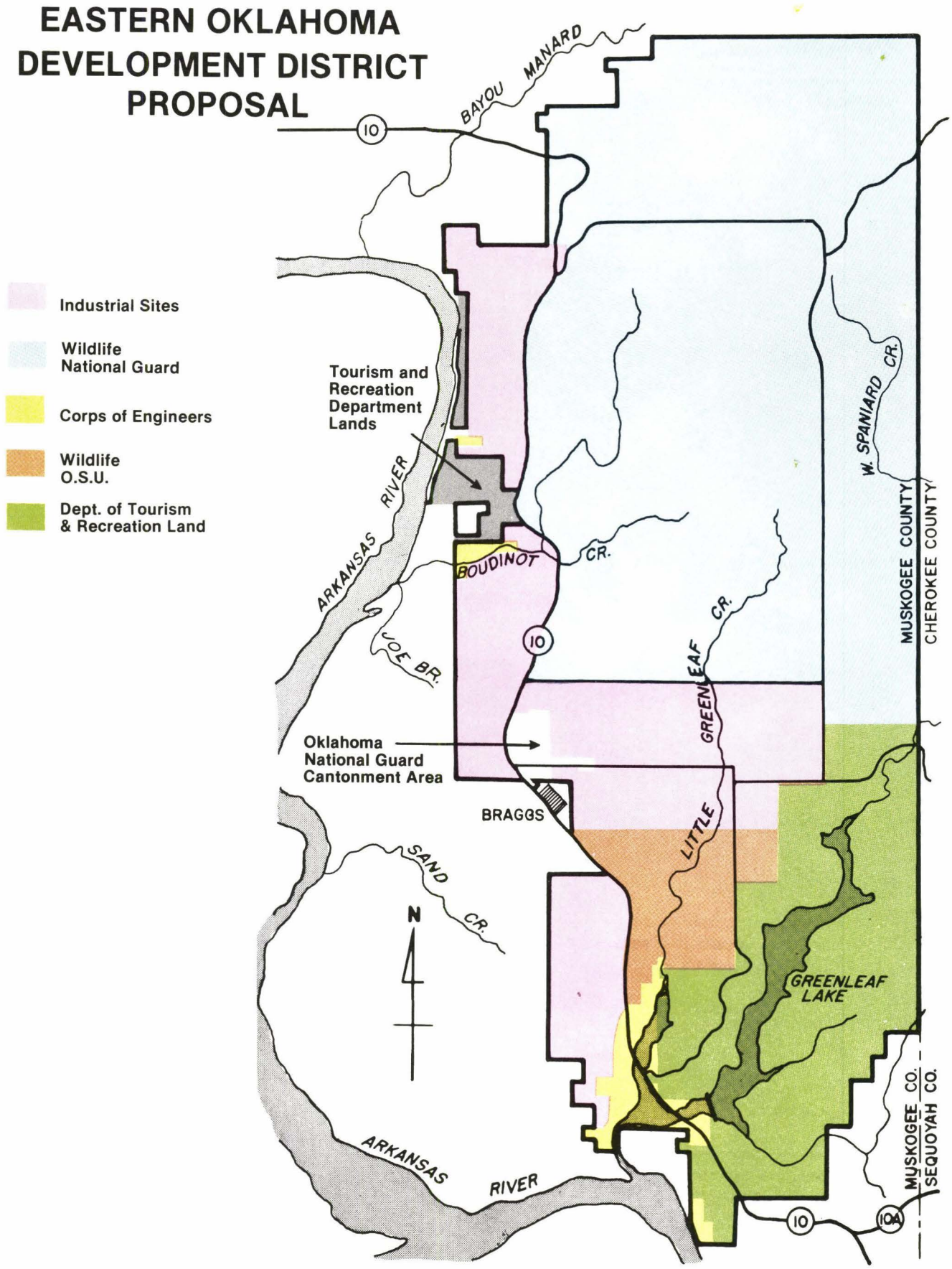
FURTHER BE IT RESOLVED THAT AGREEMENTS BE WRITTEN THAT CLEARLY PROVIDE FOR TRANSFER OF USE FROM WILDLIFE MANAGEMENT TO INDUSTRIAL USE FOR THOSE AREAS SO IDENTIFIED, SUCH AGREEMENTS TO BE APPROVED IN FORM BY THE OKLAHOMA INDUSTRIAL DEVELOPMENT COMMISSION AND THE MUSKOGEE CHAMBER OF COMMERCE.

FURTHER BE IT RESOLVED THAT PRIOR TO FINAL RECOMMENDATIONS BY THE U.S. FOREST SERVICE FOR FUTURE MANAGEMENT OF SAID TRACT OF LAND, LOCAL ENTITIES AND INTERESTS BE PROVIDED THE OPPORTUNITY FOR REVIEW AND COMMENT WITH THE OBJECTIVE IN MIND TO ARRIVE AT A CONSISTENT AND COMPATIBLE PLAN FOR SATISFYING THE MANY LOCAL ACTIVITIES FOR THE FUTURE OF THE AREA.

APPROVED, this 24th day of February, 1977, by the Board of Directors of the Eastern Oklahoma Development District Association.

ATTEST:

EASTERN OKLAHOMA DEVELOPMENT DISTRICT PROPOSAL



MEETING ATTENDANCE RECORD

PLACE MUSKOGEE CIVIC CENTER DATE FRIDAY, JANUARY 21, 1977

PROGRAM DISPOSITION OF CAMP GRUBER MEETING

DURATION OF MEETING 9:30 A.M. TO 1:45 P.M.

	NAME	ADDRESS	REPRESENTING
1.	Foreman Carlile	Warner, Okla.	Okla. Dept. of Wildlife
2.	Bill Scheman	Muskogee, Okla.	Okla. Dept. of Wildlife
3.	R.D. Roberts	Muskogee	USFS
4.	[illegible]	[illegible]	[illegible]
5.	[illegible]	[illegible]	[illegible]
6.	[illegible]	Muskogee	Muskogee County
7.	[illegible]	[illegible]	Okla. Dept. of Wildlife
8.	[illegible]	[illegible]	Chamber of Commerce
9.	[illegible]	[illegible]	[illegible]
10.	[illegible]	[illegible]	[illegible]
11.	[illegible]	[illegible]	[illegible]
12.	[illegible]	[illegible]	U.S. Senate Office
13.	[illegible]	[illegible]	[illegible]
14.	[illegible]	[illegible]	[illegible]
15.	[illegible]	Muskogee	Muskogee City
16.	Patrick O'Kiley	[illegible]	[illegible]
17.	[illegible]	Muskogee	[illegible]
18.			
19.			
20.			
21.			
22.			

MEETING ATTENDANCE RECORD

PLACE MUSKOGEE CIVIC ASSEMBLY CENTER DATE WEDNESDAY, FEBRUARY 9, 1977

PROGRAM MEETING CONCERNING DISPOSITION OF CAMP GRUBER

DURATION OF MEETING 1:00 p.m. to [illegible]

	NAME	ADDRESS	REPRESENTING
1.	Bill Scheman	RT4 Box 408C	Okla. Dept. of Wildlife
2.	Foreman Carlile	Warner, Okla. 74469	" " "
3.	[illegible]	[illegible]	USFS
4.	[illegible]	[illegible]	Greatest State Park
5.	[illegible]	Muskogee	Chamber Comm.
6.	[illegible]	RT 5 Muskogee	[illegible]
7.	[illegible]	Route 4 Wagoner	[illegible]
8.	[illegible]	Box 14 Mazon	[illegible]
9.	[illegible]	188 Muskogee	[illegible]
10.	[illegible]	P.O. Box [illegible]	Muskogee Phoenix
11.	[illegible]	P.O. Box 787	Muskogee Chamber
12.	[illegible]	[illegible]	USDD
13.	[illegible]	[illegible]	USDD
14.	[illegible]	P.O. Box [illegible] Muskogee, Okla.	[illegible]
15.	Bill Noah	Oklahoma Department of Wildlife	Muskogee
16.	R.D. Roberts	Ch. of Com.	Muskogee
17.	[illegible]	[illegible]	[illegible]
18.	[illegible]	RT 3 Tahlequah	Cherokee Nation
19.	[illegible]	[illegible]	[illegible]
20.	[illegible]	5501 Dewey Ave	Muskogee
21.	[illegible]	903 Fe	Muskogee
22.	[illegible]	1440 S. Cherokee	OSU
23.	[illegible]	Muskogee	Chamber of Commerce
24.	Patrick O'Kiley	Muskogee	Congressional Office

Eastern Oklahoma Development District

Proposal

A. To the extent possible, the lands should be allotted to the long term primary uses spelled out in the Board of Directors resolution. Two non-primary uses (grazing, National Guard) should also be recognized, in joint use with other primary uses.

Study Team Comments

1. This proposal was developed from broad based public input, and probably expresses the local consensus of opinion fairly well.

2. The allottment of land is essentially the same as proposed by the Muskogee Chamber of Commerce, so the same comments apply.

B. During an interim period, direct administrative responsibility (land ownership) for all of Camp Gruber should be vested in two state agencies (Department of Wildlife Conservation and Tourism and Recreation Department) and the U. S. Army Corps of Engineers.

1. The state and federal agencies mentioned all have the professional expertise to manage lands at Camp Gruber, as do other state and federal agencies not mentioned.

2. Ample authority exists to transfer military lands from the federal government to the state, as evidenced by past transfers in Cherokee County and in Muskogee County west of Highway 10.

3. The Secretary of Agriculture has authority to convey Title III lands to public agencies by various means on condition that the property is used for public purposes. Since 1954, when the Forest Service was assigned responsibility for Land Utilization Projects, policies and procedures have evolved whereby many Title III lands were transferred to the National Forests and National Grasslands, as well as to state, local and other federal agencies.

C. Written agreements be drawn up clearly providing for transfer of land to industrial use when needed.

This might be possible on state owned lands, but the federal government cannot make such a commitment in advance.

D. U. S. Forest Service review its final recommendations with local interests.

1. The study report will be distributed to all parties who contributed to its preparation and to any other interested parties.

2. The study report will not provide all the answers at Camp Gruber, but will bring together many varying viewpoints so that the matter of jurisdiction can be resolved in another forum.

RECEIVED
MAY 26 1977
Ouachita N.F.

Oklahoma Wildlife Federation

State Affiliate National Wildlife Federation

P.O. BOX 1262 NORMAN, OKLAHOMA 73069 (405) 364-3609

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May 24, 1977

Mr. Alvis Owens
U. S. Forest Service
P. O. Box 1270
Hot Springs, Arkansas 71901

Dear Mr. Owens:

We appreciate the opportunity to have our comments included in the official record of your study of Camp Gruber.

As you know from our previous conversations, the Oklahoma Wildlife Federation considers Camp Gruber to be of exceptional value from a wildlife habitat standpoint and also as a wildlife-based recreation area. We are absolutely adamant in our position that any management program failing to maximize the optimum mix of wildlife management and recreation on Gruber is unacceptable.

Of the alternatives and management decisions mentioned in your letter, the one of most concern to us is the possibility of transferring title of Camp Gruber to the State of Oklahoma. The pressures for this transfer were initiated by interests who want part of Camp Gruber committed to industrial development, an energy park, or other similar uses which would foreclose wildlife and recreational uses on the land parcels in question.

We believe title and management responsibility for Camp Gruber should rest with the U. S. Forest Service. Balancing a variety of public land uses with a good resource conservation program is more likely to occur under the auspices of the Forest Service than under any State Management Team or plan so far proposed. Several of the individuals who would serve on the State Mangement Team have made it perfectly clear that they favor industrial development and use of the Gruber area at the expense of wildlife and recreation. Economic and social uses do not have to be eliminated but they must be compatible with resource conservation, wildlife and recreational uses.

I believe the following information about the wildlife and level of public use of these lands will clarify why we feel as strongly as we do about Gruber.

A major problem for wildlife in Oklahoma is the loss of good wildlife habitat areas. The Oklahoma Department of Wildlife Conservation recently estimated that these losses exceed 100,000 acres per year in our state. The 33,240 acres of land that comprise the Camp Gruber Study Area provide excellent deer habitat and good habitat for such traditional game species as quail, rabbit, and squirrel. Water fowl and fur-bearers use the small ponds on the Gruber area. The quality of the area for these game species is attested to by a statement you have received from the Wildlife Department's Assistant Game Chief, Byron Mosier: " We consider Gruber to be our most heavily used public hunting area in the state".

However, analyzing the wildlife values of Gruber only in terms of game species barely scratches the surface. I refer you to the environmental analysis of the area prepared about two years ago by the Battell Institute for the Atomic Energy Commission. Their analysis of the flora and fauna on Camp Gruber was fairly complete and there is no point in my repeating it in this letter. I especially call your attention to their discussions of rare and endangered species and also recommend that their data be reviewed in light of the booklet on rare and endangered vertebrates and plants prepared for the State of Oklahoma since the Battell report appeared.

Recreational use of the area since 1968 has averaged well over 140,000 individuals per year. In addition to hunting, this includes hiking and backpacking, wildlife watching and photography, picnicking, and some camping. Projections indicate that this use will increase to more than a quarter of a million people by 1980, and, based on information from our members, I believe this may be conservative.

I can also say from personal expericence that most people perceive their single greatest hinderance to enjoying outdoor recreation to be the lack of recreational land open to public access. At any rate, the recreational value of Camp Gruber is sure to increase because of growing land use demands of all types.

When the Forest Service assumes title to all of the lands in the Study Area and/or full management responsibility, there are several points that need special attention.

First, there have been abuses of the conditions of grazing permits in the past. Grazing programs, if they are well managed and stringently enforced, can be beneficial to wildlife and compatible with other public uses of the land. We strongly urge that the Forest Service be assigned ultimate responsibility for designing, managing, and enforcing a grazing program that will benefit wildlife, be compatible with recreation, and enhance soil and water conservation measures on Gruber.

Areas subject to erosion as indicated on the Soil Erosion Map in the materials you sent should receive critical area treatment, road closures or whatever level of management necessary. Erosion control plans should be developed in cooperation with the Soil Conservation Service, the Oklahoma Department of Pollution Control, and the Oklahoma Wildlife Department.

We are also particularly concerned about the widespread and sometimes illegal use of off-road vehicles and motorcycles in portions of the area. The use of these vehicles on any part of Camp Gruber should be reviewed. It should be determined if it is feasible to develop an enforcement and management plan that will protect the resources and be compatible with other uses of Gruber. If so, it may be possible to accomodate a limited amount of ORV recreation in a carefully defined portion of Gruber.

Please be assured that the Oklahoma Wildlife Federation intends to pursue any legal or administrative remedies to the fullest extent necessary to insure that the Forest Service is permitted and/or required to assume their rightful jurisdiction and responsibility over Camp Gruber. I will be glad to answer any questions about our position.

Respectfully,

William W. Howard

William W. Howard
Executive Director

RECEIVED
MAY 31 1977
Ouachita N.F.

Oklahoma Wildlife Federation

State Affiliate National Wildlife Federation

P.O. BOX 1262 NORMAN, OKLAHOMA 73070 (405) 364-3609

Forest Supv.
Dep. Forest Supv.
Dist. Mgmt. Ser.
Admin. Ser.
T & F
Criminal Inv.
Mgmt. Anal.
Off. Ser.
Personnel
Dir. Planning
Dir. Rec.
Dir. Tech. Ser.
Dir. Wildlife
Exec. Sect.
OTHER RTG.
Files

May 26, 1977

Mr. Alvis Owens
U. S. Forest Service
P. O. Box 1270
Hot Springs, Arkansas 71901

Dear Mr. Owens:

In the statement I submitted for the Oklahoma Wildlife Federation earlier this week we failed to define the membership of the Oklahoma Wildlife Federation for your use in weighting our comments. I would like to have this letter doing that included in the record.

The Oklahoma Wildlife Federation is a non-profit citizens conservation organization consisting of approximately 8,000 individual members plus another 25,000 persons associated with us by virtue of their membership in one of our 67 local affiliate clubs. We are also the State Affiliate of the 3.5 million member National Wildlife Federation.

Our position on conservation issues and matters such as the Camp Gruber Study are derived from the input of elected officers of the Federation. In addition to this democratically representative procedure, we have polled our membership on the Camp Gruber issue. Of the responses we received, more than 70% favored the U. S. Forest Service assuming full title and management responsibilities.

Thank you again for the opportunity to comment on this situation.

Respectfully,

William W. Howard

William W. Howard
Executive Director

WWH/nh

The following article appeared in the February 1977 issue of Outdoor News, the news letter of the Oklahoma Wildlife Federation. Letters that resulted follow:

Should Camp Gruber be put on the block for industrial development? Parts of it may be if some efforts now underway are successful. A movement to have Camp Gruber transferred to the State of Oklahoma has been revived and it is no secret that the real purpose of doing this is to grease the way for industrial uses including, perhaps, nuclear energy facilities. You can make your opinion heard most effectively by writing:

Mr. John Archer
U.S. Forest Service
Indiana and Winona Streets
Hot Springs, AR 71901

★ ★ ★ ★ ★

ARMCO

MAR 2 ? 1977

DEAR MR. ARCHER: 3-18-77

CAMP GRUBER IS ONE LAST SPOTS IN OKLAHOMA THAT MY FAMILY ENJOYS SO MUCH. MY WISH IS THAT CAMP GRUBER REMAINS THE WAY IT IS NOW. PLEASE DON'T HAVE CAMP GRUBER TRANSFERRED TO THE STATE OF OKLA.

SINCERELY

James L. Graham
401 LOOP DR.
SAND SPRINGS, OKLA
74063

Christmas Tree Hill Farm
COL. MAYNARD C. MILLER
1536 Northcrest Drive
ADA, OKLAHOMA 74820
Phone 405/332-3020

March 4, 1977

Dear Mr. Archer,

This pertains to the possible future use of a portion of Camp Gruber for a nuclear energy facility.

As a dedicated conservationist I feel strongly that we must enlarge our nuclear energy program — and if Camp Gruber is a good place to build plants, let's build them there.

To hell with the Sierra Club types who oppose everything and offer no adequate alternatives.

Maynard C Miller
(COL. U.S.A. (RET).

P. S. You may be interested to know that I have my own private forest: 10,000 Scotch and Austrian pines in a choose-and-cut Christmas tree plantation outside Ada.

Dear Mr. Archer

Your name was given to me as someone to send this information to. The time was short and we were told that you needed it by the 15th. I believe we could get many more if we had more time. We mailed out about 50 sheets to different areas in Eastern Okla but I didn't want to wait any longer to get them back.

Our sportsmen club has been working very hard to improve hunting and game management in Braken and I think the great majority of people in Eastern Okla. does not want any part of it used for industrial purposes.

I would challenge the planners to put the issue on a statewide ballot during an election.

We understood that the Wildlife Dept had agreed to the area west of Highway 10 but now some of the good area between Braggs & Tenkiller is being considered We are definitely against this.

Sidney Dodson Pres Cherokee [illegible]

58

TO WHOM IT MAY CONCERN:

We the undersigned, concerned citizens of Eastern Oklahoma, oppose the use of Gruber Game Management Area for an industrial park. This includes Cherokee County, Muskogee County, and the refuge portions of Gruber.

NAME	ADDRESS
Kenneth Wilson	501 west chickasaw Street
Chris Hendley	Rt 2 Park Hill Okla. 74451
Rhonda Phipps	Rt. 1, Box 214, Tahlequah
James Davis	Rt 1 Welling Okla 74471
Bert Frank	Rt 2 Box 114A Tahlequah
Mitchell Dodd	Rt 1 Tahlequah Ok.
Fay Young	Rt 3 Box 392 Tahlequah, OK.
Margaret Jackson	Rt 1 Box 39 Park Hill Ok.
Bob Jackson	Rt 1 Box 39 Park Hill Ok.
Hazle E. Harper	Rt 4 Box 25 Chouteau Okla.
Clarence Gardner	3708 E. 24
Jessie Hodge	Rt 1 Box 168 Park Hill, Ok
Zola D Porter	Rt 1 Box 204A Park Hill Ok
Elbert Hartsell	2716 N W 31 OKLA CITY OKLA 73112
A. D. Porter	Rt 1 Box 204 Park Hill OKla 74457
Donald Arrowood	
[illegible]	R. 1 Box 167A Park Hill Okla 74451
Bob Dirdner	301 East Shawnee Tahlequah
Mike Dirdner	1302 East Shawnee Tah. Ok

Please return this petition to; Cherokee County Sportsmen Club, c/o Purdy's Sport Shop, N. Muskogee Ave., Tahlequah, OK. 74464. Use the self-addressed stamped envelop which is enclosed.

TO WHOM IT MAY CONCERN:

We the undersigned, concerned citizens of Eastern Oklahoma, oppose the use of Gruber Game Management Area for an industrial park. This includes Cherokee County, Muskogee County, and the refuge portions of Gruber.

NAME	ADDRESS
Phillip Baker	707 S. Wilson Tahlequah
Ae Rozar	206 Northside Court, Tahlequah
Jo Green	106 Cedar, Tahlequah
Richard Crawford	213 North Side Court Tahlequah
John T Butterfield	1107 Hillcrest - Tahlequah.
Raymond Watkins	Loop Route - Tahlequah
Robert D. Spears	829 N. Choctaw Tahlequah OK.
Vaudean Bear	712 South Ista. Tahlequah, Ok
Harvey Price	Box 383 Rt 3 Tahlequah Okla.
Robin Dorsey	Grad Ipe Scholars Inn Tahlequah
Charles Sales	Rt 2, Box 33-D, PARK HILL OK
Agnes Griffin	210 Bluff, Tahlequah
T Harrison	509 Seminary, Tahlequah
Jo Ragsdale	Cherokee Village 320 Tahlequah, O
Vera Baker	707 S Wilson, Tahlequah
Gemma Johnson	509 Jackson Tahlequah
Janice Monger	Bumbill Bee Acres
Jack R. Duffinger	Rte 2, Proctor, Okla 74457
Valerie Kitcher	827 E Shawnee Tahlequah
Johnny Ree Weaver	Rt 2 Cann Addn Tahlequah

Please return this petition to; Cherokee County Sportsmen Club, c/o Purdy's Sport Shop, N. Muskogee Ave., Tahlequah, OK. 74464. Use the self-addressed stamped envelop which is enclosed.

TO WHOM IT MAY CONCERN:

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NAME	ADDRESS
Bobby Jackson	Rt 1 Box 39 Park Hill
Jesse Jamison	Rt 1 402 4th St. Tahlequah
Everyn Crandall	Rt 2 Tahlequah
Tommy Hixson	Rt 2, Box 222 Tahlequah
Elias Johnson	P.O. Box 1243 - Muskogee
Roy Johnston	Route 2 Proctor, Okla.
Ralph Manes	Route 2 Tahlequah OKla.
Jack Bain	Route 2 Proctor Okla.
Gerald Gallion	Route 3 Tahlequah
Jerry Harper	Loop Rt. Tahlequah, OK
Kelsie Childress	Rt 1 Welling OKla
Dwayne Chamblee	Rt 1 Welling Okla
Danny Walker	P.O. Box 1331 Tah. OK.
Paul Asbill	140 Mission Tah OK
Rita Gilleman	Rt 2 Box 108 B
Dwight Crozell	Rt 2 Tahlequah Okla
Rayford Moore	Rt 2 Box 198 Tahlequah OK.
William Sturgeon	Rt 2 Box 236A Tahlequah, OK.
Roady McCarter	205 E. Boone
Chuck Chambers	Rt 1 Tah

Please return this petition to; Cherokee County Sportsmen Club, c/o Purdy's Sport Shop, N. Muskogee Ave., Tahlequah, OK. 74464. Use the self-addressed stamped envelop which is enclosed.

TO WHOM IT MAY CONCERN:

We the undersigned, concerned citizens of Eastern Oklahoma, oppose the use of Gruber Game Management Area for an industrial park. This includes Cherokee County, Muskogee County, and the refuge portions of Gruber.

NAME	ADDRESS
Lola Hall	Rt 1 Box 278 Tahlequah
Kendall Tipton	Rt 2, Box 85C Tahlequah
Jerry Crawford	425 Keetoowah Tahlequah
Darrel Yancey	Rt 3, Box 375, Tahlequah
Gene Grisby	226 Wilson Tahlequah
Joann Grisby	Rt 4 Box 242 Tahlequah 74464
Loretta Hauck	Loop Rt., Tahlequah, Okla
Jeb Phillips	1005 FRANCIS TAHLEQUAH OK
Edna A Gardner	1301 E. Shawnee Tahlequah, Ok
Bobbie B. Dirdner	1301 E. Shawnee, Tahlequah, O
Maude Dirdner	1306 E. Shawnee, "
Steve Gardner	1306 E. Shawnee "

Please return this petition to; Cherokee County Sportsmen Club, c/o Purdy's Sport Shop, N. Muskogee Ave., Tahlequah, OK. 74464. Use the self-addressed stamped envelop which is enclosed.

TO WHOM IT MAY CONCERN:

We the undersigned, concerned citizens of Eastern Oklahoma, oppose the use of Gruber Game Management Area for an industrial park. This includes Cherokee County, Muskogee County, and the refuge portions of Gruber.

NAME	ADDRESS
Gary L Tinker	Lost Route Tahlequah
Jack Hummingbird	Rt 2 Hulbert
David Caldwell	Rt 3 Box 24 Tahlequah
Bonnie Lee	
Alice Wyers	Rt Box 01 A Park Hill
Janet Walker	Rt 2 Box 108 Tahlequah
Red Boote	Rt 2 Box 16 Park Hill, Ok. 7445
	Rt 3 Box 233 Ok
Dennie Turner	General Delivery Tahlequah Okla
Julie Stroup	Cherokee Vil Apt 35E Tahlequa
Myrtle Garner	Cherokee Vil Apts 39A Tahlequa
Mary Wagner	Rt 2 Tahlequah, OK 744
	420 South Muskogee Ave. Tahlequ
Jeff Sandusa	265 Cart St Tahlequah Okla
Freeman	Rt 1 Box Tahlequah OK
Bryan Hix	
Wayne Kendall	Rt 2 Box 4 Tahlequah
Bob McCartney	Loop Rt Tahlequah, OK

Please return this petition to; Cherokee County Sportsmen Club, c/o Purdy's Sport Shop, N. Muskogee Ave., Tahlequah, OK. 74464. Use the self-addressed stamped envelop which is enclosed.

Muskogee, Oklahoma,
April 13, 1977

Mr. John Archer, Forest Ranger,
U. S. Forestry Service,
Indiana-Wynona Street,
Hot Springs, Arkansas, 71901.

Dear Mr. Archer:

After several telephone calls I was informed you were the one to contact with respect to disposition of Camp Gruber lands, which lay to the southeast of this city.

I am concerned for three reasons. First, I hold voting rights in the Cherokee Tribe, being 1/8 Cherokee through my mother who was born on former communal Cherokee lands. Second, I know how a dispossessed land owners feels. Third, I believe the government has taken far too much land from private owners, land not now used for original purpose, and perhaps never intended to be. It was required to obtain federal funds, etc. Rich farm land, grazing land, prospective home sites.

Camp Gruber, originally, was Cherokee lands in common. By agreement forced by the U. S. Government before statehood, Cherokees were offered 110 acre allotments, but close to three thousand Cherokees never received land, for the Dawes Commissioners (acting for the government) ran out of land.

Cherokees who survived and held on, against pressure to sell allotments for this reason or that, were forced to sell when Camp Gruber was planned, a camp never destined to remain in existence ten years. Many of the land owners were full bloods, some not speaking or understanding the English language. I know, for I was Chief Clerk of the CCC Division, Five Tribes Agency. These Indians remained on their allotments and when bulldozers moved in, our office was called in to remove the Cherokees, with household furniture, farm equipment, live stock, whatever. It was a tragic time for them and for us who could only help in a small way, something more.

There were Indian churches and brush arbor camp meeting sites on revered spots and creeks. The Indians signed many times not knowing or realizing (this is perhaps a better word) what was to happen in their lives.

I just wonder how much land the state and federal government owns today, Mr. Archer, land which is dormant (I know of many such in Oklahoma) and on which no taxes are paid. Private owners pay taxes, which helps defray our state an federal expenses. Land held by government is a dead loss unless government buildings are theron, reserves, parks, and such. Unused land is not mowed, is a fire hazard, a litter dump ground. I know this full well, for I have almost been burned out twice.

APR 25 1977

Oklahoma Deer Sportsmen Association
Rt 3 Box 60-A
Choctaw, OK 73020
20 April 77

Mr. John Archer
U S Forest Service
Hot Springs, Ark 71901

Dear Sir.

I am writing in reference to the changing of title to Camp Gruber. Gruber is one of the most used areas in the state especially during the hunting seasons. It provides thousands of hours of recreation to many sportsmen. I oppose any change of title which would jeopardize the present use of Camp Gruber and request that the recreational value be considered in your evaluation

Sincerely

Richard H. Gill
Vice President

#2.

Please consider, in final disposition, the former Indian and White land-owners and/or heirs, and if none are living, then the Cherokee Nation can take over this land for an Indian park, recreational and historical center. You would be surprised at the interest which is taken today in Indian lore, custom and such. I know for I am a volunteer worker at the Five Civilized Tribes Museum in Mukogee. Last Sunday, close to 1000 persons visited the Museum. The old Camp Gruber grounds are alive with history, Indian Territory and Oklahoma history.

I feel the land should be returned to former land owners at price they were forced, in the final, to accept for land they DID NOT CHOOSE to sell. Surely, it is time for justice to come to some who have suffered in this "right of progress domain" business.

Have you visited Camp Gruber grounds, Mr. Archer? Have you spoken with our Principal Chief Ross Swimmer or the Second Chief, Mr. Perry Wheeler?

This letter is lengthy, but I do ask your consideration for the former owners.

Most sincerely and respectfully,

Lena Lockhart Daugherty
(Mrs. W. R. Daugherty)
Route 1 Box 350
Muskogee, Oklahoma 74401

RAMADA INN
Welcome home

RAMADA INN OF DOVER, DELAWARE

561 N. DuPONT HIGHWAY
DOVER, DELAWARE 19901
PHONE (302) 678-8900

20 March 77

Mr. John Archer

Should Camp Gruber be put on the block for Industrial development? - if the nuclear energy facilities are such a good deal, they can afford To buy the land and don't need free land.

I have hunted the Camp Gruber area and would like it To remain the same or improved as a hunting area.

My job as a Flight Engineer Takes me all across The United States - in almost every state there are stories of lack of land To hunt on and loss of game habitat. I think we are losing Too much game area here.

thank you for any help

Marty J Hill
RT. 1 Box 127
Jones, Okla. 73049

60

Welcome home
TOLL FREE: 800-228-2828

March 7, 1977

Mr. John Archer
U. S. Forest Service
Indiana and Winona Streets
Hot Springs, Arkansas 71901

Dear Mr. Archer:

I have been reading in the news media about plans to transfer Camp Gruber to the State of Oklahoma. This transfer in itself is fine and I would encourage it.

Any attempts, however, to use Camp Gruber for an industrial park or anything similar are extremely alarming and should be stopped. It is no secret that lands largely dedicated to wildlife habitat are disappearing at an alarming rate and one advantage of areas like Camp Gruber is the effect on wildlife habitat.

I personally am an industrial engineer and believe in controlled economic growth. Growth, however, at the expense of natural resources must be controlled and even stopped in the future. Please give this matter very careful consideration.

Yours very truly,

Wayne C. Turner

2817 N. Husband
Stillwater, OK
74074

Dear Mr. Archer,

I feel it would be a serious mistake for any part of Camp Gruber to be transferred to the State of Oklahoma. I visit the area often. There are few lands of public access in Oklahoma that compare with Camp Gruber. It would be a shame to lose any part of it, especially to industrial development.

Sincerely,

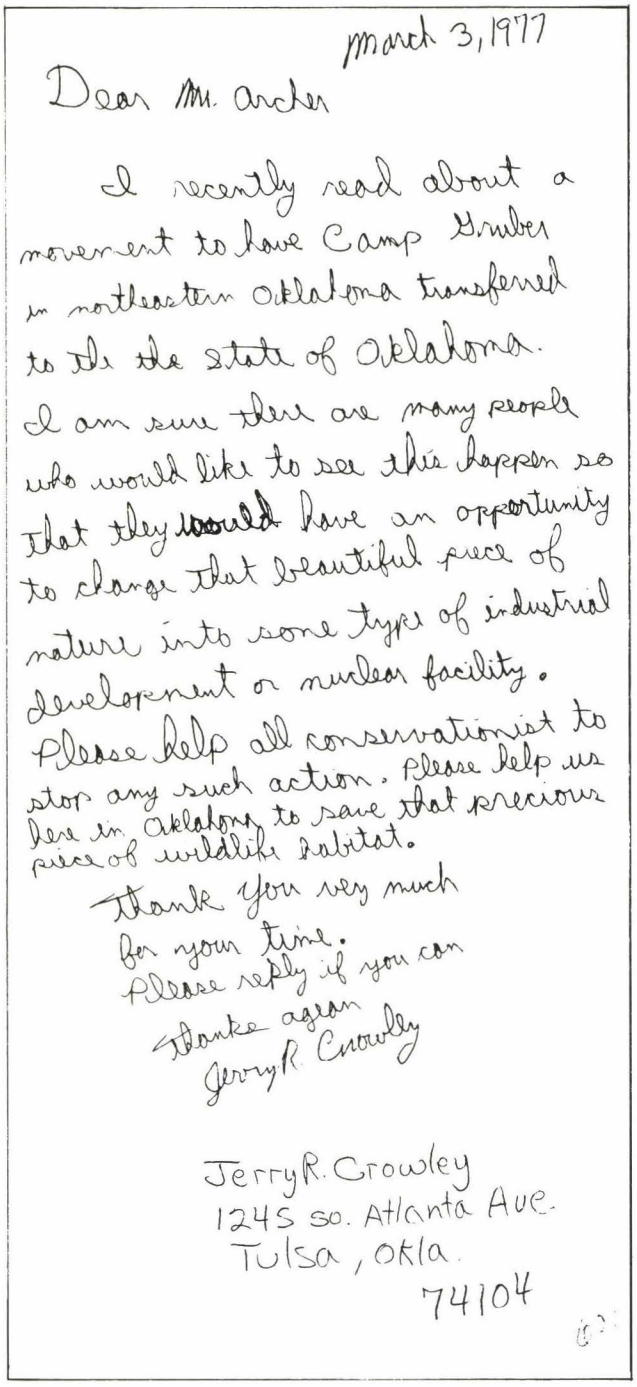
APR 8 1977

Dear Sir,

I'am wirting you about issue of Camp Gruber transfer. This area is one of the mostbeautiful area in Oklahoma with it wildlife from deerand elk to all kind of bird, and fish . This land is in bad need of a management plan for all of it different type of recreation usefulness fishing, hunting to four wheeling on maintain road

A move to turn Gruber into a industrial facilities is back by big business and politician wanting a fast buck and to rape the public of it right to use Gruber to view it beauty. I ask you to stop the transfer of Camp Gruber and let the elective company buy their own land for this propose use.

Sincerely Your
Kenneth L Moore
Kenneth L Moore



march 3, 1977

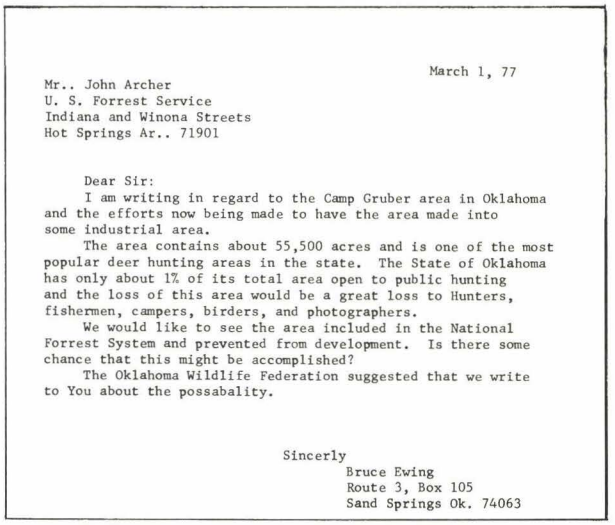
Dear Mr. Archer

I recently read about a movement to have Camp Gruber in northeastern Oklahoma transferred to the the state of Oklahoma. I am sure there are many people who would like to see this happen so that they would have an opportunity to change that beautiful piece of nature into some type of industrial development or nuclear facility. Please help all conservationist to stop any such action. Please help us here in Oklahoma to save that precious piece of wildlife habitat.

Thank you very much for your time. Please reply if you can

thanks again
Jerry R. Crowley

Jerry R. Crowley
1245 so. Atlanta Ave.
Tulsa, Okla.
74104



March 1, 77

Mr.. John Archer
U. S. Forrest Service
Indiana and Winona Streets
Hot Springs Ar.. 71901

Dear Sir:

I am writing in regard to the Camp Gruber area in Oklahoma and the efforts now being made to have the area made into some industrial area.

The area contains about 55,500 acres and is one of the most popular deer hunting areas in the state. The State of Oklahoma has only about 1% of its total area open to public hunting and the loss of this area would be a great loss to Hunters, fishermen, campers, birders, and photographers.

We would like to see the area included in the National Forrest System and prevented from development. Is there some chance that this might be accomplished?

The Oklahoma Wildlife Federation suggested that we write to You about the possabality.

Sincerly
Bruce Ewing
Route 3, Box 105
Sand Springs Ok. 74063

Oklahoma Wildlife Federation and Interested Individuals

Proposal

A. A variety of proposals expressed in individual letters written to the study team as a result of an article in the Oklahoma Wildlife Federation Newsletter for February 1977.

Study Team Comments

These proposals were received during a 90 day public comment period requested by the Oklahoma Wildlife Federation.

B. Opposes dedicating any land to any use which would foreclose wildlife and recreational use, such as for industrial development or as an energy park.

1. There appears to be sufficient reasons for setting aside an industrial site at Camp Gruber for future use.

2. Site recommended in this study would have the least impact on wildlife or recreational use. It lies on land acquired for military purposes and not on Title III land.

C. Forest Service assume title and management responsibility for Camp Gruber.

1. This would be in keeping with the intent of Executive Order 9282 of December 15, 1942, which states ". . . The lands transferred by this Order shall be returned to the Secretary of Agriculture for administration pursuant to Title III of the said Bankhead-Jones Farm Tenant Act, when they are no longer needed for military purposes."

2. If returned, the Forest Service has existing authorities and policies to permit it to —
   - — Interchange lands with the Corps of Engineers.
   - — Exchange lands with state and local agencies and private parties.
   - — Authorize continuation of present uses by special use permit or cooperative agreement.
   - — Otherwise administer the multiple resources at Camp Gruber.

3. If returned to the Forest Service for administration, an Environmental Impact Statement would be prepared spelling out how the lands would be administered. This procedure is required by the National Environmental Policy Act, the Resource Planning Act and the National Forest Management Act.

D. Forest Service correct past grazing abuses, soil erosion, and illegal off-road vehicle use, after assuming management responsibility.

None of the past abuses are irreversible, and technical expertise is available to correct these problems or see that they do not reoccur.

VI CONCLUSIONS

The lands at Camp Gruber are not being managed to their fullest potential, and probably won't be until some final disposition of the lands is made.

The Oklahoma Department of Wildlife Conservation holds a license for 23,515 acres which expires in 1992. This agency conducts a good professional program, but cannot manage the lands to the intensity of their own as long as the uncertainty of future land ownership exists.

The Oklahoma Tourism and Recreation Department has a license for 1,326 acres for the Greenleaf Lake State Park. This is an attractive, well-run state park. The license expires in 1983. Uncertainty of future land ownership is a problem here also.

The Oklahoma National Guard holds a license for 26,076 acres for military training purposes that expires in 1992. The program is well run, but the license covers more land than is required. The uncertainty of future land ownership is delaying the construction of improvements needed for National Guard training.

Lynn Hubler has a grazing lease for 23,490 acres which expires on August 31, 1977. This assures that some of the forage resource at Camp Gruber is being utilized.

The Corps of Engineers has designated about 1,000 acres for the Arkansas River Navigation System.

Other conditions existing at Camp Gruber Include —

- Eroded areas exist and many roads need improvment or reconstruction.
- Muskogee County does not have sufficient area designated for future industrial development.
- Brush is encroaching on the open areas.
- No program for timber removal exists, even though 53 percent of the area is forested.
- Approximately 6,000 acres at Camp Gruber are not being used by any licensee or lessee, and thus receive no management.
- Much of the area receives uncontrolled motorcycle use.

The Title III lands should be returned to the Secretary of Agriculture in accordance with Executive Order 9282. Administration and possible disposition would be determined as provided for in the Bankhead-Jones Farm Tennant Act. Jurisdiction of the military lands, other than those needed for the Arkansas River Navigation System, should be transferred to the Secretary of Agriculture since they and the Title III lands together form a logical unit.

VII. NEEDS

- The unutilized lands lying west of Highway 10 and around the south end of Greenleaf Lake (approximately 6,000 acres) should be managed for recreation, wildlife and range.
- A timber management program should be started, primarily to benefit wildlife.
- A prescribed burning program should be initiated to stop the brush encroachment in the open land.
- The Department of Wildlife Conservation, the Tourism and Recreation Department and the National Guard should be given assurance of continued use of the area.
- The Trails System (backpacking, hiking and motorcycle) proposed by the Tourism and Recreation Department should be constructed.
- A watershed restoration program should be initiated to repair eroded areas.
- 600-1,000 acres of Site 5 should be set up for future industrial development.
- The transportation system should be improved.
- A Range Management Plan should be developed and put into operation.
- A range management research project should be set up in conjunction with Oklahoma State University.

APPENDIX

A BRIEF HISTORY OF THE LAND UTILIZATION PROGRAM

The Cookson Hills Land Utilization Project in Muskogee County, Oklahoma (designated OK-LU-2), is one of some 250 Land Utilization Projects in 45 states established on 11.3 million acres of land acquired by the federal government between 1933 and 1946.

Administration of the Land Utilization Program was transferred from the Soil Conservation Service to the Forest Service in the Secretary of Agriculture's reorganization on January 2, 1954.

Under policy established by the Secretary of Agriculture, the Forest Service made a study of the Land Utilization Projects over the nation during the period 1954-1960. Several were added to the National Forest System, including National Grasslands. Many of the projects were granted, sold or exchanged for other lands to state and local governmental agencies by the Secretary of Agriculture under authority of Subsection (c), Section 32, Title III of the Bankhead-Jones Farm Tenant Act of July 22, 1937, as amended.

Following is a summary of the other Land Utilization Projects in Oklahoma and their disposition:

Project No.	County	Acreage	Disposition
OK-LU-1	Payne, Noble	19,324	Oklahoma State University
OK-LU-21	Cimarron	15,243	Rita Blanca National Grassland (F.S.)
OK-LU-22	Roger Mills	30,968	Black Kettle National Grassland (F.S.)
OK-LU-23	Woodward	—	Bureau of Plant Industry
OK-LU-24	McCurtain	35,098	Tiak Ranger District (Ouachita NF)

Agricultural Economic Report No. 85 (August 1965) describes the origin, development and status of the Land Utilization Program quite well. The following Summary, Table 4, Table 6 and Table 9 are taken from this U. S. Department of Agriculture report:

SUMMARY

Among the critical agricultural problems of the 1930's was the cultivation of a large acreage of submarginal farmland — land that could not profitably grow crops. Mortgage foreclosures, tax delinquencies, and personal hardship were commonplace in areas where large acreages of submarginal land were being farmed. Severe droughts, floods, erosion, poor cultivation practices, neglect, and, frequently, abandonment were causing heavy damage to the land.

Recognizing the magnitude of the submarginal land problem, the Secretary of Agriculture summoned a National Conference on Land Utilization in 1931, to study these problems and to make reports and recommendations. One result was the creation of the National Resources Board, which assembled data and prepared maps showing submarginal land areas. This Board recommended in 1934 that the Federal Government purchase and develop 75 million acres of submarginal farmland in the various regions to serve the public and relieve the distress of the occupants of the submarginal land and of nearby areas. An Executive Order late in 1933 already had established funds to buy land, retire it from cultivation, and develop it for pasture, forest, range, park, recreation, wildlife refuge, and similar uses. The program devised was based on research, and on the cooperation of professional organizations, State agricultural experiment stations, land management and research agencies of the Departments of Agriculture and Interior, and local governments, grazing associations, and soil conservation districts.

Some 250 land utilization projects, totaling 11.3 million acres in 45 States, were acquired for $47.5 million (about $4.40 an acre exclusive of public domain land assigned) between 1933 and 1946. More than four-fifths of this total acreage — 9.5 million acres — is now used chiefly for range and forests and related multiple uses, such as wildlife protection, watersheds, and recreation. Over one-sixth — 1.8 million acres — is used for wildlife refuges and parks.

All sales made to the Federal Government were voluntary. Title to the land was obtained under provisions of the emergency relief and industrial recovery acts, and the Bankhead-Jones Farm Tenant Act, all passed in the 1930's. Parts of the 11.3 million acres are now managed by 7 Federal agencies, and 2 or more State agencies in some 30 States. Up to 1954, when arrangements were made for permanent land assignments, the costs of developing the land were about $102.5 million (about $9 an acre). So the total cost for land and development was approximately $150 million. Much of the labor of developing the land was done by persons who would otherwise have been jobless.

Nearly 25,000 families occupied the acquired land. More than 8,000 needy families were helped to relocate. Over 16,000 families relocated by their own efforts. In some cases, families could remain in their homes and work on the development or maintenance of projects.

The land utilization projects were not uniform in nature, size, use, or management; no 2 projects were exactly alike. They ranged in size from less than a thousand acres to more than a million. Some 100 Federal and State projects are now in forests; about 30 are in Federal grassland pasture and range; about 70 are in parks and recreation areas; and 50 are in wildlife refuges and management areas. Multiple use is a practice

common to all projects. Many projects have good buildings, roads, water supplies, and other facilities for management, fire control, timber processing, grazing, fish and wildlife production and management, experimental demonstrations of good forest and grassland practices, and recreational sites.

Most of the agricultural projects have been under the administration and management of the Forest Service and the Bureau of Land Management since 1954, and now are in National Forests, National Grasslands, and Federal grazing districts. Cooperative grazing associations have an important part in use and management of these lands.

Comparative studies of the project land in the 1930's, and in the 1960's after 30 years, show much change and improvement. Useful purposes are served by providing rural recreational areas, wildlife refuges, and supplemental incomes to local people from grazing and forestry, from employment in maintenance and operation, and from related private enterprises. The Federal Government and the States receive fairly substantial payments for use of land now in forest and grass, as a result of improved management, restoration, and development. Counties where these lands are located receive 25 percent of the income from the land for the support of schools and roads.

An outstanding feature of these land utilization projects is that they give people a chance to observe good land use practices and efficient management of forests, grasslands, and recreational and wildlife areas. The projects are proving grounds for social, economic, and educational programs.

The Nation was made aware that poor agricultural land should not be allowed to suffer from misuse, or to absorb the unemployment during depressions. The land utilization program helped reverse U. S. policies encouraging settlement and development of land whether or not it was suited to cultivation. The program as a whole put much land to more profitable uses.

Considered as a whole, much of this land has been developed into useful units and has become an important factor in the local and regional area's life and welfare. The land utilization program of the 1930's bears a close resemblance to the 1964 plans to aid in the alleviation of rural poverty and distress.

Case studies of 12 projects illustrate the wide diversity of land use problems in different regions of the country — the past ill-adopted use for agriculture, and the shift to use for parks, wildlife refuges, forests, and grasslands. How better usage has been brought about is shown by description of improvement and management.

TABLE 4. Number of acres and percentages of land acquired, fiscal years 1935-46.

Fiscal year[1]	Amount[2]	Percentage of total
	1,000 acres	Percent
1935	368	3.2
1936	1,374	12.2
1937	3,736	33.1
1938	2,465	21.8
1939	652	5.8
1940	1,467	13.0
1941	822	7.3
1942	267	2.4
1943	127	1.1
1944	15	0.1
1945	5	(4)
1946	1	(4)
Total	[3] 11,299	100.0

[1] There was nearly always a lag between the year that land was optioned and the year it was purchased and the case closed. Reporting time differed in 1942 and 1943 from that in other years.

[2] Limited to land for which title clearance was completed and the case closed.

[3] Acreages acquired by Federal, State, and other agencies, with related information on their use and management, are shown in appendix A, which explains differences in number and size of projects that appeared in various annual reports on the land program, 1934-63.

[4] Less than 0.1 percent.

Sources: Annual Reports of the Chief, Soil Conservation Service, 1935-46.

TABLE 6. Location of land acquired, by general geographic regions, 1934-46.

Region[1]	Acreage	Percentage of total
	1,000 acres	Percent
Northern	986	8.7
Southern	2,187	19.4
Southwest	1,681	14.9
Northern Plains[2]	5,620	49.7
Central Mountain	212	1.9
Pacific	613	5.4
Total	11,299	100.0

[1] Northern Region: Northeastern, Corn Belt, and Lake States.

Southern Region: Appalachian, Southeastern, and Delta States.

Southwest and Southern Plains: Arizona, New Mexico, Oklahoma, and Texas.

Northern Plains: North and South Dakota, Nebraska, Kansas, Montana, Wyoming, and Colorado.

Central Mountain Region: Idaho, Nevada, and Utah.

Pacific Region: California, Oregon, and Washington.

[2] Most of the land acquired in the Northern Plains was east of the Rocky Mountains in the dryland plains portions of Colorado, Kansas, Montana, Nebraska, North and South Dakota, and Wyoming.

Note: Tables in Appendix A group acreages by the 10 farm production regions instead of the 6 geographic regions. By using the State acreages in the appendix tables; totals for the geographic regions may be readily assembled.

TABLE 9. Status of land utilization projects transferred to the Forest Service, or placed under its custody, as of June 30, 1964.

Item	Acreage
	1,000 acres
Assignment to the Forest Service:	
Transferred to the Forest Service prior to 1/2/54	1,062
Transferred to the Forest Service on 1/2/54	6,958
Placed under the Forest Service custody	827
Total assigned to the Forest Service	8,847
Retained for permanent administration by the Forest Service:	
National Forests	1,460
National Grasslands	3,804
	5,264
Balance (for disposal or permanent assignment)	161
Total under administration of the Forest Service	5,425
Disposal to other agencies and parties:	
Transferred to the Bureau of Land Management	2,187
Transferred to other Federal agencies	57
Granted to State, county, and city agencies	806
Sold to State, county, and city agencies	190
Exchanged for lands within National Forests or research areas	102
Placed in trust for Pueblo Indians	78
Reconveyances and sales to former owners and other private parties	2
Total disposals	3,422

Source: Forest Service.

The President

EXECUTIVE ORDER 9282

TRANSFERRING JURISDICTION OVER CERTAIN LANDS FROM THE SECRETARY OF AGRICULTURE TO THE SECRETARY OF WAR FOR MILITARY PURPOSES

OKLAHOMA

WHEREAS certain lands in the State of Oklahoma have been acquired, or are in process of acquisition, under authority of the National Industrial Recovery Act, approved June 16, 1933 (48 Stat. 200), the Emergency Relief Appropriation Act of 1935, approved April 8, 1935 (49 Stat. 115), and Title III of the Bankhead-Jones Farm Tenant Act, approved July 22, 1937 (U. S. C., title 7, secs. 1010–1013, 50 Stat. 522, 525), in connection with the Cookson Hills Land Utilization Project of the Department of Agriculture; and

WHEREAS by Executive Order No. 7908 of June 9, 1938,[1] all the right, title, and interest of the United States in those lands acquired, or in process of acquisition, under authority of the aforesaid National Industrial Recovery Act and the Emergency Relief Appropriation Act of 1935 were transferred to the Secretary of Agriculture for use, administration, and disposition in accordance with the provisions of Title III of the aforesaid Bankhead-Jones Farm Tenant Act, and the related provisions of Title IV thereof; and immediately upon the acquisition of legal title to those lands now in process of acquisition under authority of the said acts, the said order, under the terms thereof, will become applicable to all the additional right, title, and interest thereby acquired by the United States; and

WHEREAS it appears that the use of such lands by the Secretary of War for military purposes would best carry out the land conservation and land utilization program for which such lands were acquired and would be in the public interest:

NOW, THEREFORE, by virtue of and pursuant to the authority vested in me by section 32 of Title III of the aforesaid Bankhead-Jones Farm Tenant Act, and upon recommendation of the Secretary of Agriculture, it is ordered that all lands within the hereinafter-described areas acquired or in process of acquisition by the United States, together with the improvements thereon, be, and they are hereby, transferred from the Secretary of Agriculture to the Secretary of War for military purposes: *Provided, however,* that the Secretary of Agriculture shall retain such jurisdiction over the lands now in process of acquisition by the United States as may be necessary to enable him to complete their acquisition.

MUSKOGEE COUNTY, OKLAHOMA

Indian Meridian

T. 13 N., R. 20 E., secs. 1 to 4; 9 to 12; 14, 15, inclusive
T. 14 N., R. 20 E., secs. 1 to 5; 8 to 17; 20; 23 to 27; and 33 to 36, inclusive
T. 15 N., R. 20 E., secs. 13 to 16; 21 to 30; and 32 to 36, inclusive.

Executive Order No. 8277, dated October 28, 1939,[2] which transferred certain lands in the above-described area from the Secretary of Agriculture to the Secretary of War for use as a military reservation, is superseded by this order.

Executive Order No. 8571, dated October 19, 1940,[3] which transferred control and jurisdiction over 4.43 acres of lands within the above-described area from the Secretary of Agriculture to the Secretary of the Interior for the benefit of certain Indians, is hereby revoked.

It is intended that the lands transferred by this order shall be returned to the Secretary of Agriculture, for administration pursuant to Title III of the said Bankhead-Jones Farm Tenant Act, when they are no longer needed for military purposes.

FRANKLIN D ROOSEVELT

THE WHITE HOUSE,
December 15, 1942.

[F. R. Doc. 42-13415; Filed, December 16, 1942; 10:51 a. m.]

[1] 8 F.R. 1389.

[2] 4 F.R. 4444.

[3] 5 F.R. 4187.

EXECUTIVE ORDER

TRANSFER OF JURISDICTION OVER CERTAIN LANDS FROM THE SECRETARY OF AGRICULTURE TO THE SECRETARY OF WAR

OKLAHOMA

WHEREAS certain lands in the State of Oklahoma within the hereinafter-described areas have been acquired or are in process of acquisition under the authority of the Emergency Relief Appropriation Act, approved April 8, 1935 (49 Stat. 115), in connection with the Cookson Hills (LA–OK 2) Land-Utilization and Land-Conservation Project of the Department of Agriculture; and

WHEREAS by Executive Order No. 7903,[1] dated June 9, 1938, all the right, title, and interest of the United States in such lands, acquired or in process of acquisition, was transferred to the Secretary of Agriculture for use, administration, and disposition in accordance with the provisions of Title III of the Bankhead-Jones Farm Tenant Act, approved July 22, 1937 (50 Stat. 522, 525), and the related provisions of Title IV thereof; and immediately upon the acquisition of legal title to those lands now in process of acquisition the said order, by the terms thereof, will become applicable to all the additional right, title, and interest thereby acquired by the United States; and

WHEREAS it appears that the use of such lands as a military reservation would be in the public interest:

NOW, THEREFORE, by virtue of and pursuant to the authority vested in me by section 32 of Title III of the said Bankhead-Jones Farm Tenant Act, and upon recommendation of the Secretary of Agriculture, it is ordered that all lands within the hereinafter-described areas acquired or in process of acquisition by the United States, together with the improvements thereon, be, and they are hereby, transferred from the Secretary of Agriculture to the Secretary of War for use as a military reservation: *Provided, however,* that the Secretary of Agriculture shall retain such jurisdiction over the lands now in process of acquisition by the United States as may be necessary to enable him to complete their acquisition.

MUSKOGEE COUNTY OKLAHOMA

Indian Meridian

T. 14 N., R. 20 E.,
sec. 5, those parts lying west of State Highway No. 10.
T. 15 N., R. 20 E.,
sec. 29, W½;
sec. 30, E½E½NE¼;
sec. 32, those parts lying west of State Highway No. 10.

FRANKLIN D ROOSEVELT

THE WHITE HOUSE,
October 28, 1939.

[No. 8277]

[F. R. Doc. 39–4022; Filed, October 30, 1939; 2:41 p. m.]

The President

EXECUTIVE ORDER

TRANSFER OF CONTROL AND JURISDICTION OVER CERTAIN LANDS FROM THE SECRETARY OF AGRICULTURE TO THE SECRETARY OF THE INTERIOR

OKLAHOMA

WHEREAS the hereinafter-described lands have been acquired by the United States under the authority of the Emergency Relief Appropriation Act of 1935, approved April 8, 1935 (49 Stat. 115), in connection with the land-utilization project of the Department of Agriculture known as the Cookson Hills Project, LU-OK-2; and

WHEREAS by Executive Order No. 7908,[1] dated June 9, 1938, all the right, title, and interest of the United States in such lands was transferred to the Secretary of Agriculture for use, administration, and disposition in accordance with the provisions of Title III of the Bankhead-Jones Farm Tenant Act, approved July 22, 1937 (50 Stat. 522, 525), and the related provisions of Title IV thereof; and

WHEREAS it appears that the transfer of the control and jurisdiction over such lands from the Secretary of Agriculture to the Secretary of the Interior for administrative purposes would be in the public interest:

NOW, THEREFORE, by virtue of the authority vested in me by section 32 of Title III of the said Bankhead-Jones Farm Tenant Act, and upon recommendation of the Secretary of Agriculture, it is hereby ordered that the control and jurisdiction over the hereinafter-described lands, together with the improvements thereon, be, and it is hereby, transferred from the Secretary of Agriculture to the Secretary of the Interior; and the Secretary of the Interior is hereby authorized to administer such lands, through the Commissioner of Indian Affairs, for the benefit of such Indians as he may designate, under such conditions of use and administration as will best carry out the purposes of the land-conservation and land-utilization program for which such lands were acquired:

Muskogee County, Oklahoma

Beginning at a point 1993.18 feet South, and 45.5 feet West of the NE¼ of Section 15, Township 13 N., R. 20 E., thence West 580 feet to a point; thence South 333 feet to a point; thence East 580 feet to a point; thence North 333 feet to the place of beginning; containing 4.43 acres, more or less.

FRANKLIN D ROOSEVELT

THE WHITE HOUSE,
October 19, 1940.

[No. 8571]

[F. R. Doc. 40-4448; Filed, October 22, 1940; 9:52 a. m.]

[1] 3 F.R. 1389.

Revoked by E.O. 92

Boundary of Camp Gruber

The area studied consists of the 33,248.76 acres presently held by the U.S.A., more particularly described as follows:

Indian Meridian

T. 13 N., R. 20 E.
Sec. 1, N½, SW¼, N½ SE¼, W½ SW¼ SE¼;
Sec. 2;
Sec. 3;
Sec. 4;
Sec. 9, NE¼, E½ NE¼ NW¼, SE¼ NW¼, NE¼ SE¼ SW¼, SW¼ SE¼, N½ SE¼;
Sec. 10, E½, NW¼, N½ SW¼, SE¼ SE¼ SW¼;
Sec 11;
Sec. 12, N½ NW¼, SW¼ NW¼, NW¼ SW¼;
Sec. 14, N½;
Sec. 15, NE¼, that part of the NW¼ SE¼ lying north and east of the Missouri-Pacific Railroad right-of-way, that part of Lot 5 lying north and east of the Missouri-Pacific Railroad right-of-way, E½ SE¼;
T. 14 N., R. 20 E.,
Sec. 1;
Sec. 2;
Sec. 3;
Sec. 4;
Sec. 5, NE¼, NE¼ NW¼, Lot 4 less and except 10.37 acres in a square in the northwest corner and less and except the north one-half of 10.00 acres in a square in the southwest corner, S½ NW¼, N½ SE¼, N½ SW¼ SE¼, that part of the S½ SW¼ SE¼ lying east of easterly right-of-way line of State Highway No. 10, SE¼ SE¼;
Sec. 6, that part of Lots 1, 7, 8, 13 lying north and west of the Missouri-Pacific Railroad right-of-way, that part of the south one-fourth of Lot 1 and the north one-fourth of Lot 7 lying east of the Missouri-Pacific Railroad right-of-way;
Sec. 8, NE¼ NE¼, that part of the NW¼ NE¼ lying east of the easterly right-of-way line of State Highway No. 10, S½ NE¼, NW¼ NE¼ NW¼, NW¼ NW¼, N½ SW¼ NW¼, S½ S½ SW¼ NW¼, S½ S½ SE¼ NW¼, S½ NE¼ SE¼ SE¼ NW¼, S½;
Sec. 9;
Sec. 10;
Sec. 11;
Sec. 12;
Sec. 13;
Sec. 14;
Sec. 15;
Sec. 16;
Sec. 17;
Sec. 20;
Sec. 21;
Sec. 22;
Sec. 23;
Sec. 24;
Sec. 25;
Sec. 26;
Sec. 27;

Sec. 28; NE¼, E½ NW¼, that part of the SE¼ lying north and east of the Missouri-Pacific Railroad right-of-way, that part of the E½ SW¼ lying north and east of the Missouri-Pacific Railroad right-of-way;

Sec. 29, that portion of Lot 5, Block 16 located in the Town of Braggs, Muskogee County, Oklahoma, more particularly described as follows: beginning at the northwest corner, Lot 5, thence running east 18.84', thence southeast thru Lot 5 a distance of 244.1', thence southwest 14.0' to the Missouri-Pacific Railroad right-of-way line, thence northwest along right-of-way line to the point of beginning; a part of the N½ NW¼ NE¼ NE¼, more particularly described as follows: beginning at the northwest corner of the above described five acres, thence east 50', thence south to railroad right-of-way line, thence northwest along railroad right-of-way line to the west line of the said five acres, thence north to the point of beginning; a part of the N½ NW¼ NE¼ NE¼, more particularly described as follows: beginning at a point 50' east of the northwest corner of the above described property and running 50' east to the east right-of-way line of the Wye tract at station 4 + 65.5 of said tract, thence in a northeasterly direction in a 14° curve to station 0 + 22 of said tract, thence west to the Missouri-Pacific Railroad right-of-way line, thence northwest along Missouri-Pacific Railroad right-of-way line to a point 50' east of the east one-sixteenth section line, thence north to the point-of-beginning;

Sec. 33;

Sec. 34;

Sec. 35;

Sec. 36;

T. 15 N., R. 20 E.,

Sec. 13;

Sec. 14;

Sec. 15, NE¼, E½ NW¼, E½ NW¼ NW¼, SW¼ NW¼, S½;

Sec. 16, SE¼ NE¼, NE¼ SW¼ NE¼, S½ SW¼, S½ SE¼, NE¼ SE¼;

Sec. 17, SE¼ SE¼ SE¼, S½ NE¼ SE¼ SE¼;

Sec. 21;

Sec. 22;

Sec. 23;

Sec. 24;

Sec. 25;

Sec. 26;

Sec. 27;

Sec. 28;

Sec. 29, S½ NE¼, S½ NW¼, NW¼ NW¼, N½ SW¼, E½ SW¼ SW¼ (east 20.00 acres of Lot 1), that part of the west 17.70 acres of Lot 1 lying west of the Missouri-Pacific Railroad right-of-way, SE¼ SW¼, SE¼;

Sec. 30, E½ E½ NE¼;

Sec. 31, Lot 5, Lot 6, that part of Lot 11 lying west of the Missouri-Pacific Railroad right-of-way;

Sec. 32, E½, E½ NW¼, E½ NW¼ NW¼ (east 20.00 acres of Lot 1), that part of the west 16.31 acres of Lot 1 lying west of the Missouri-Pacific Railroad right-of-way, E½ SW¼ NW¼ (east 20.00 acres of Lot 2), that part of the west 19.80 acres of Lot 2 lying west of the Missouri-Pacific Railroad right-of-way, that part of the W½ W½ SW¼ lying west of the Missouri-Pacific Railroad right-of-way, E½ W½ SW¼, E½ SW¼;

Sec. 33;

Sec. 34;

Sec. 35;

Sec. 36.

LAND USE NEEDS
MUSKOGEE COUNTY
1975-2000

Type of Use	Factor	Additional Population 1975	Acres Needed	Additional Population 1980	Acres Needed	Additional Population 1985	Acres Needed	Additional Population 1990	Acres Needed
Rural Residential	0.250	445	111.25	445	111.25	1552	388.00	1552	388.00
Non-Rural Residential	0.049	4384	214.82	4384	214.82	15348	752.05	15348	752.05
Commercial	0.006	4829	28.97	4829	28.97	16900	101.40	16900	101.40
Industrial	0.014	4829	67.61	4829	67.61	16900	236.50	16900	236.50
Parks	0.011	4829	53.12	4829	53.12	16900	185.90	16900	185.90
Public-Quasi Public	0.009	4829	43.46	4829	43.46	16900	152.90	16900	152.90
Streets/Alleys	0.031	4829	149.70	4829	149.70	16900	523.90	16900	523.90
Total		4829	668.93	4829	668.93	16900	2,340.65	16900	2,340.65

		Additional Population 1995	Acres Needed	Additional Population 2000	Acres Needed	Total Additional Population	Total Acres Needed
Rural Residential	0.250	236	59.00	237	59.25	4467	1,116.75
Non-Rural Residential	0.049	2190	107.31	2190	107.31	43844	2,148.36
Commercial	0.006	2426	14.56	2427	14.56	48311	289.86
Industrial	0.014	2426	33.96	2427	33.98	48311	676.16
Parks	0.011	2426	26.69	2427	26.70	48311	531.33
Public-Quasi Public	0.009	2426	21.83	2427	21.84	48311	436.49
Streets/Alleys	0.031	2426	75.21	2427	75.24	48311	1,497.65
Total		2426	338.56	2427	338.88	48311	6,696.60

MUSKOGEE COUNTY, OKLAHOMA ADVALOREM TAX LEVIES FISCAL YEAR 1976-1977 (1976 ADVALOREM TAX)

UNIT OF TAXATION	SCHOOL DIST. NO. UNIT	SCHOOL GEN. FUND	SCHOOL BLDG. FUND	SCHOOL SINKG. WIDE	SCHOOL COUNTY WIDE	COUNTY GEN. FUND	COUNTY SINKG. FUND	CITY SINKG. FUND	VO-TECH	COUNTY HEALTH	LIBRARY	TOTAL LEVIES
HASKELL	2A	35.00	5.00		4.00	10.00	1.16	3.80	5.53	2.50	2.00	68.99
	2B	35.00	5.00		4.00	10.00	1.16		5.53	2.50	2.00	65.19
FORT GIBSON	3A	35.00	5.00	16.70	4.00	10.00	1.16	4.40	5.53	2.50	2.00	86.29
	3B	35.00	5.00	16.70	4.00	10.00	1.16		5.53	2.50	2.00	81.89
	3C	35.00	5.00	16.70	4.00	10.00	1.16		5.53	2.50	2.00	81.89
BOYNTON	4A	35.00	5.00		4.00	10.00	1.16	33.30		2.50	2.00	92.96
	4B	35.00	5.00		4.00	10.00	1.16			2.50	2.00	59.66
WEBBERS FALLS	6A	35.00	5.00		4.00	10.00	1.16		5.53	2.50	2.00	65.19
	6B	35.00	5.00		4.00	10.00	1.16		5.53	2.50	2.00	65.19
OKTAHA	8A	35.00	5.00	7.34	4.00	10.00	1.16			2.50	2.00	67.00
	8B	35.00	5.00	7.34	4.00	10.00	1.16			2.50	2.00	67.00
	8V4B	35.00	5.00	7.34	4.00	10.00	1.16		5.53	2.50	2.00	72.53
WAINWRIGHT	9A	35.00	5.00		4.00	10.00	1.16		5.53	2.50	2.00	65.19
	9B	35.00	5.00		4.00	10.00	1.16		5.53	2.50	2.00	65.19
TAFT	17A	35.00	5.00	10.95	4.00	10.00	1.16		5.53	2.50	2.00	76.14
	17B	35.00	5.00	10.95	4.00	10.00	1.16		5.53	2.50	2.00	76.14
MUSKOGEE	20A	35.00	5.00	12.98	4.00	10.00	1.16	16.75	5.53	2.50	2.00	94.92
	20B & C	35.00	5.00	12.98	4.00	10.00	1.16		5.53	2.50	2.00	78.17
HILLDALE	29A	35.00	5.00	11.66	4.00	10.00	1.16	16.75	5.53	2.50	2.00	93.60
	29B & C	35.00	5.00	11.66	4.00	10.00	1.16		5.53	2.50	2.00	76.85
DEBOIS	42B	35.00	5.00		4.00	10.00	1.16		5.53	2.50	2.00	65.19
BRAGGS	46A	35.00	5.00		4.00	10.00	1.16	5.54	5.53	2.50	2.00	70.73
	46B	35.00	5.00		4.00	10.00	1.16		5.53	2.50	2.00	65.19
WARNER	74A	35.00	5.00	14.62	4.00	10.00	1.16			2.50	2.00	74.28
	74B	35.00	5.00	14.62	4.00	10.00	1.16			2.50	2.00	74.28
	74V4B	35.00	5.00	14.62	4.00	10.00	1.16		5.53	2.50	2.00	79.81
PORUM	80A	35.00		12.20	4.00	10.00	1.16			2.50	2.00	66.86
	80B	35.00		12.20	4.00	10.00	1.16			2.50	2.00	66.86
	80V4B	35.00		12.20	4.00	10.00	1.16		5.53	2.50	2.00	72.39
SEQUOYAH CO.	J6B	35.00	5.00	11.55	4.00	10.00	1.16		5.53	2.50	2.00	76.74
MCINTOSH CO.	J19B	35.00	5.00	12.60	4.00	10.00	1.16			2.50	2.00	72.26
MCINTOSH CO.	J27A	35.00	5.00	5.40	4.00	10.00	1.16		5.53	2.50	2.00	70.59
	J27B	35.00	5.00	5.40	4.00	10.00	1.16		5.53	2.50	2.00	70.59

* "A" Unit represents Inc. Cities & Towns
** "B" Unit represents Rural Area
*** "C" Unit represents 40 acres or more in one tract inside an Inc. City or Town, but not subject to City Levies

No City General Fund

STATE OF OKLAHOMA, COUNTY OF MUSKOGEE SS:

I, Jody Kirk, the duly elected, qualified and acting County Clerk in and for said County and State DO HEREBY CERTIFY that the above and foregoing is a full, true, correct and complete statement of all levies as made by the Excise Board for the Fiscal Year beginning July 1, 1976 and ending June 30, 1977, covering Muskogee County and all municipal subdivisions thereof.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal this 24th day of September, 1976.

Jody Kirk

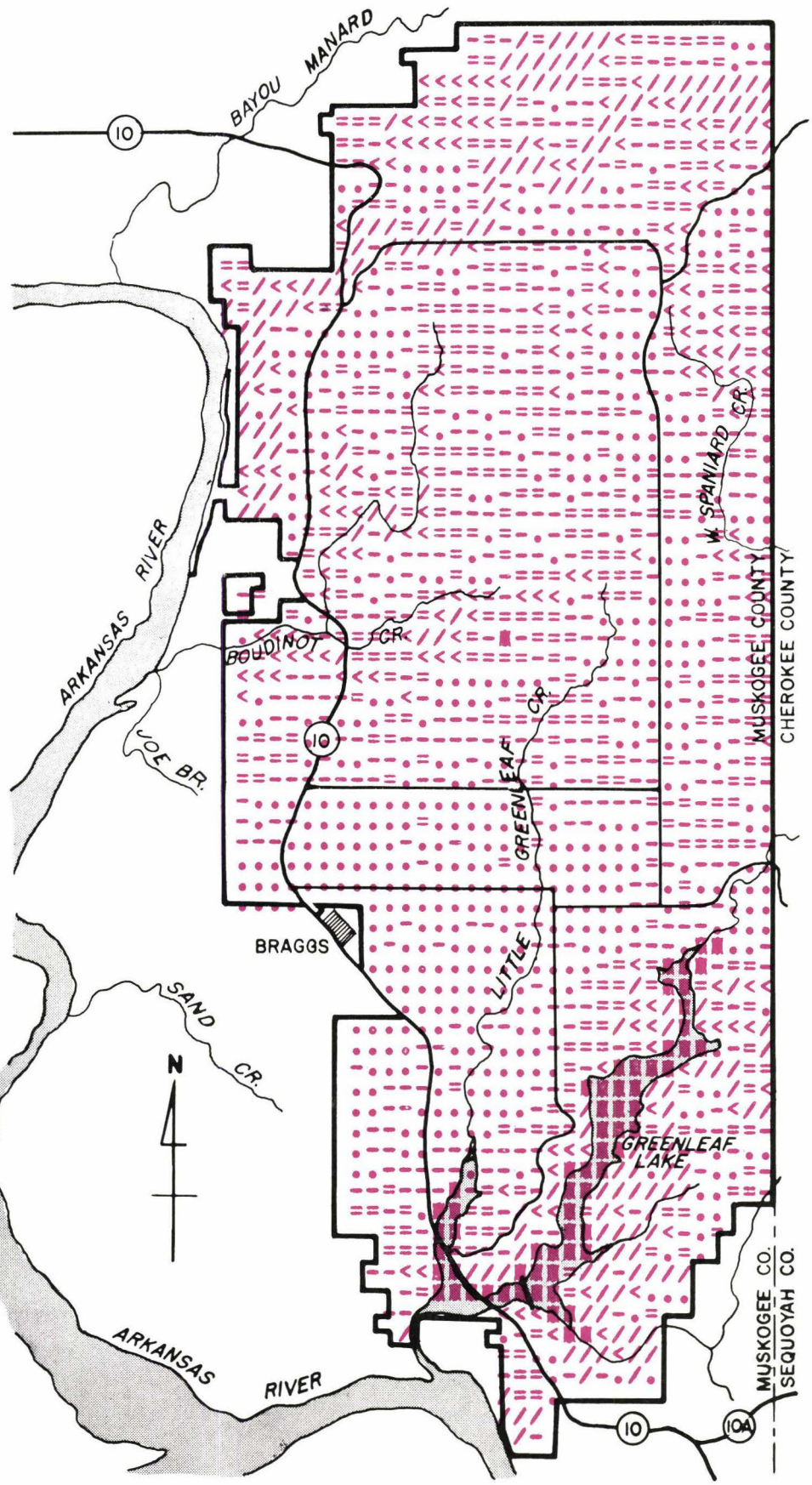
JODY KIRK, COUNTY CLERK
Muskogee County, Oklahoma

TOPOGRAPHY ANALYSIS AND SUMMARY

A topography study was made using U. S. Geological Survey 7½ topographic maps. Each symbol represents the % slope on 18.4 Acre cells.

The study showed the following approximate acreages by slope class.

10,180 Acres are 0-2%
7,600 Acres are 3-5%
7,540 Acres are 6-10%
3,520 Acres are 11-15%
1,170 Acres are 16% and up

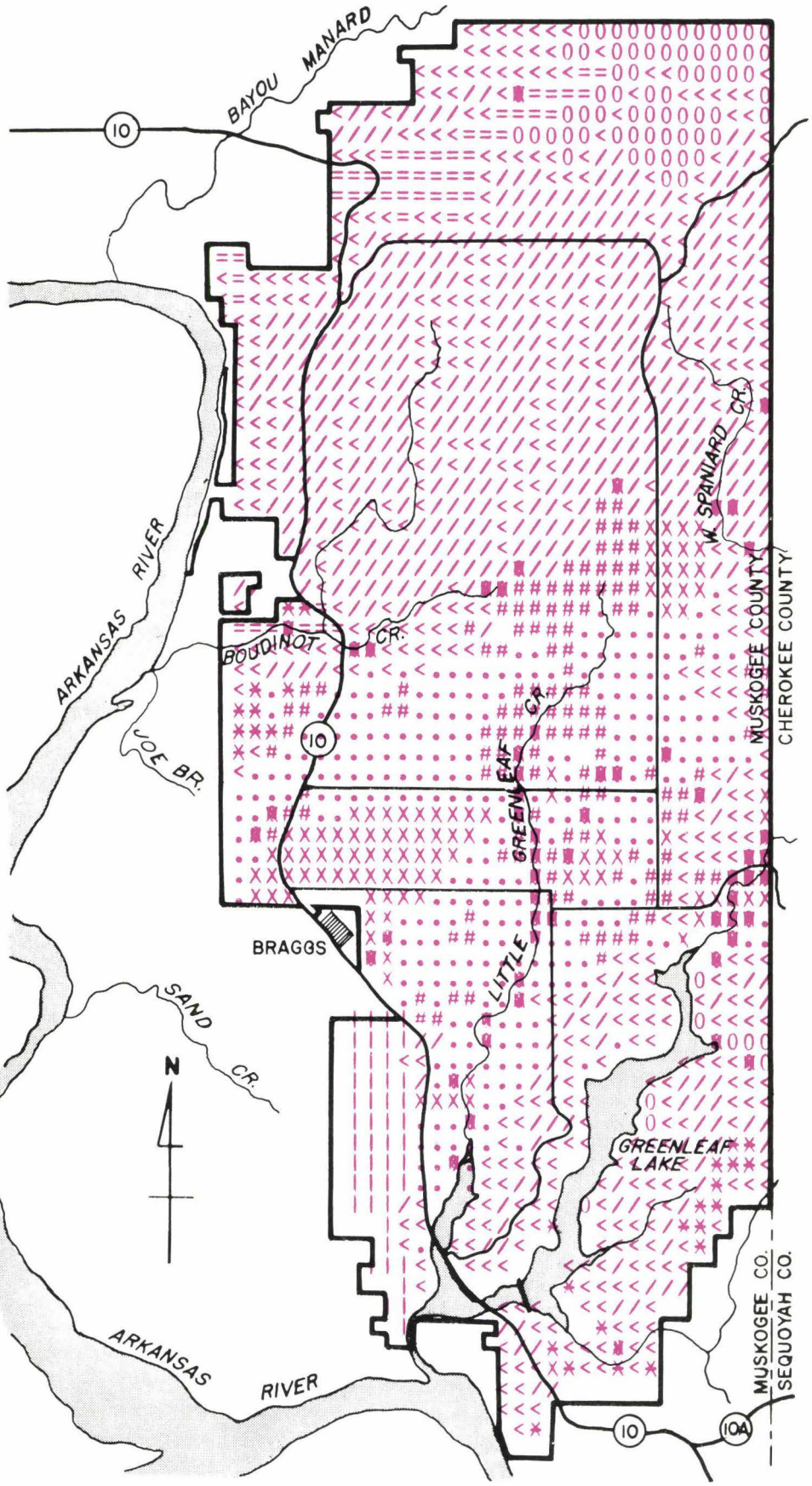


LEGEND

Slope Class	SYMBOL
1 o-2%	••
2 3-5%	--
3 6-10%	==
4 11-15%	<<
5 16% up	//
6 Water	■■

SOILS TYPE AND SUMMARY

Soil Type	Approx. Acres
0	5288
1	1377
2	1028
3	2313
4	1818
5	8885
6	918
7	863
8	532
9	9143



LEGEND Soil No.	SYMBOL
0	• •
1	0 0
2	■ ■
3	# #
4	X X
5	/ /
6	= = :
7	| |
8	✱ ✱
9	< <

Degree of Mapping Unit Suitability or Limitations for Uses that Affect Planning of Camp Gruber

Map Symbol	Suitability for Agriculture	Roads and Streets	Recreational Uses: Camp Areas	Picnic Areas	Playgrounds	Trails	Potential Timber: Pine	Hardwood
0	0-2% good 2-10% fair-2 11+% poor-2	Severe-5, 9	0-10% mod.-8, 2 11+% severe-2	0-5% slight 5-15% mod.-2 16+% severe-2	0-5% mod.-8 6+% severe-2	Slight	Good	Fair
1	Poor-3	Severe-3	Severe-3, 10, 7	Severe-3, 7, 10	Severe-3, 7, 10	Severe-7	Poor	Fair
2	Poor-4	Severe-4	Severe-4	Moderate-4	Moderate-4	Slight	Good	Good
3	Poor-10	Severe-5, 6	0-10% mod.-8, 7, 2 11+% severe-2	0-5% slight 5-15% mod.-2 15+% severe-2	0-5% mod.-2 6+% severe-2	0-15% slight 16+% mod.-2 to severe	Good	Fair
4	Moderate-6	Severe-6, 5, 9	Severe-6, 8	Severe-6	Severe-6	Severe-6	Poor	Poor
5	Poor to fair-3	Moderate-3	0-5% slight 5-10% mod.-2, 10 11+% severe-2	0-5% slight 5-15% mod.-2 16+% severe-2	0-5% mod.-2, 10 to severe 6+% severe-2	Slight	Fair to Good	Fair
6	0-10% mod.-7, 2 11+% Severe-2	Severe-5, 6	Severe-8	Moderate-8	Severe-8	Slight	Good	Fair
7	0-5% fair-1 5-15% poor-2	0-10% slight 10-15% mod.-2	0-10% mod.-1 11+% severe-2	0-15% mod.-1 16+% severe-2	0-5% mod.-1 6+% severe-2	Moderate-1	Good	Fair
8	0-10% fair-7, 2 11+% poor-2	Severe-5,6	Moderate-8	Moderate-8	Severe-8	Slight	Good	Fair
9	Poor-10, 2	5-15% mod.-2 16+% severe-2	5-10% mod.-2, 10 11+% severe-2	5-15% mod.-2 16+% severe-2	Severe-2	5-15% slight 16+% mod.-2 to severe	Good	Fair

TIMBER GROWTH POTENTIAL

Good — more than 50 cu. ft./ac./yr.
Fair — 20-50 cu. ft./ac./yr.
Poor — less than 20 cu. ft./ac./yr.

Degree of Mapping Unit Suitability or Limitations for Uses that Affect Planning of Camp Gruber

Map Symbol	SEWAGE DISPOSAL: Septic Tank Filter Fields	Sewage Lagoons	Trench Type Sanitary Landfill	Light Industry	Corrosivity for Uncoated Steel Pipe	Dwelling Without Basements
0	Severe-8	0-2% slight 2-5% mod.-2 6-16+% severe-2	Severe-7	Severe-5, 9	Moderate	Severe-5, 9
1	Severe-3, 10	Severe-3, 10	Severe-3, 10	Severe-3, 10	N.A	Severe-3, 10
2	Severe-4	Severe-4	Severe-4	Severe-4	Low	Severe-4
3	Severe-8, 3	Severe-3	Severe-7	Severe-5, 9	High	Severe-5, 9
4	Severe-8, 6	Slight	Severe-6, 7	Severe-5, 6	High	Severe-5, 6
5	Severe-3	Severe-3	Severe-3	0-15% Mod. to-3, 2 Severe 16+% Severe-2	Low to Mod.	0-15% Mod. to Severe-2, 3 16+% Severe-2
6	Severe-8	0-2% slight 3-5% mod.-2 6-16+% severe-2	Severe-7, 8	Severe-5, 9	High	Severe-5, 9
7	0-5% slight 5-15% mod.-2 16+% severe-2	Severe-1	0-5% severe-1 5-15% mod.-2 16+% severe-2	0-5% slight 5-10% mod.-2 11+% severe-2	Low	0-5% slight 5-15% mod.-2 16+% severe-2
8	Severe-8	0-2% slight 3-5% mod.-2 6-16+% severe-2	Severe-7, 8	Severe-5, 9	Moderate	Severe-5,9
9	Severe-2	Severe-2	Severe-2	Severe-2	Low to high	Severe-2

Following are the main soil properties that limit use of each unit.

1. Too sandy
2. Slope
3. Depth to bedrock
4. Flooding
5. High shrink-swell
6. Periods of wetness
7. Too clayey
8. Slow permeability
9. Low strength
10. Stony or rocky

Climatological Normals, Means, and Extremes for Muskogee 1913-1969

	Temperature (°F)						Precipitation Totals (in.)				Mean Number of Days			
	Means			Extremes							Precipitation		Temperature (°F)	
	Daily Maximum	Daily Minimum	Monthly	Record Highest	Record Lowest	Mean Degree Days**	Mean	Maximum Monthly	Year of Maximum Monthly	Mean Snow, Sleet	0.10 in. or more	0.50 in. or more	90 and above	32 and below
	48	48	48	57	57	30	30	57	--	48	7	10	10	10
Jan	49.2	29.0	39.3	81	-11	778	2.30	10.16	1932	2.7	4	1	0	20
Feb	54.2	32.7	43.0	87	-11	591	2.63	8.57	1938	2.2	4	1	0	12
Mar	62.4	39.5	51.3	93	- 2	453	3.23	9.09	1945	1.0	6	2	0	10
Apr	72.8	50.2	61.4	94	22	147	4.54	13.03	1945	T	8	3	*	1
May	79.7	58.6	69.1	98	36	28	5.75	16.36	1943	0	9	4	3	0
June	88.7	67.4	77.8	109	48	0	5.48	15.2	1935	0	6	3	17	0
July	94.1	71.0	82.1	114	53	0	3.15	10.30	1961	0	4	2	25	0
Aug	94.5	70.4	82.3	118	48	0	2.89	12.10	1915	0	4	2	26	0
Sept	87.2	62.8	75.0	108	34	0	3.49	9.65	1926	0	5	2	14	0
Oct	76.0	51.4	63.8	98	16	124	3.42	16.41	1941	T	4	2	1	1
Nov	61.9	39.4	50.8	86	11	438	2.79	8.29	1946	0.3	4	1	0	10
Dec	51.6	31.9	41.6	81	- 4	698	2.35	7.32	1932	0.7	4	2	0	17
Year	72.7	50.4	61.5	118	-11	3257	42.02	67.73#	1935#	6.9	62	25	86	71

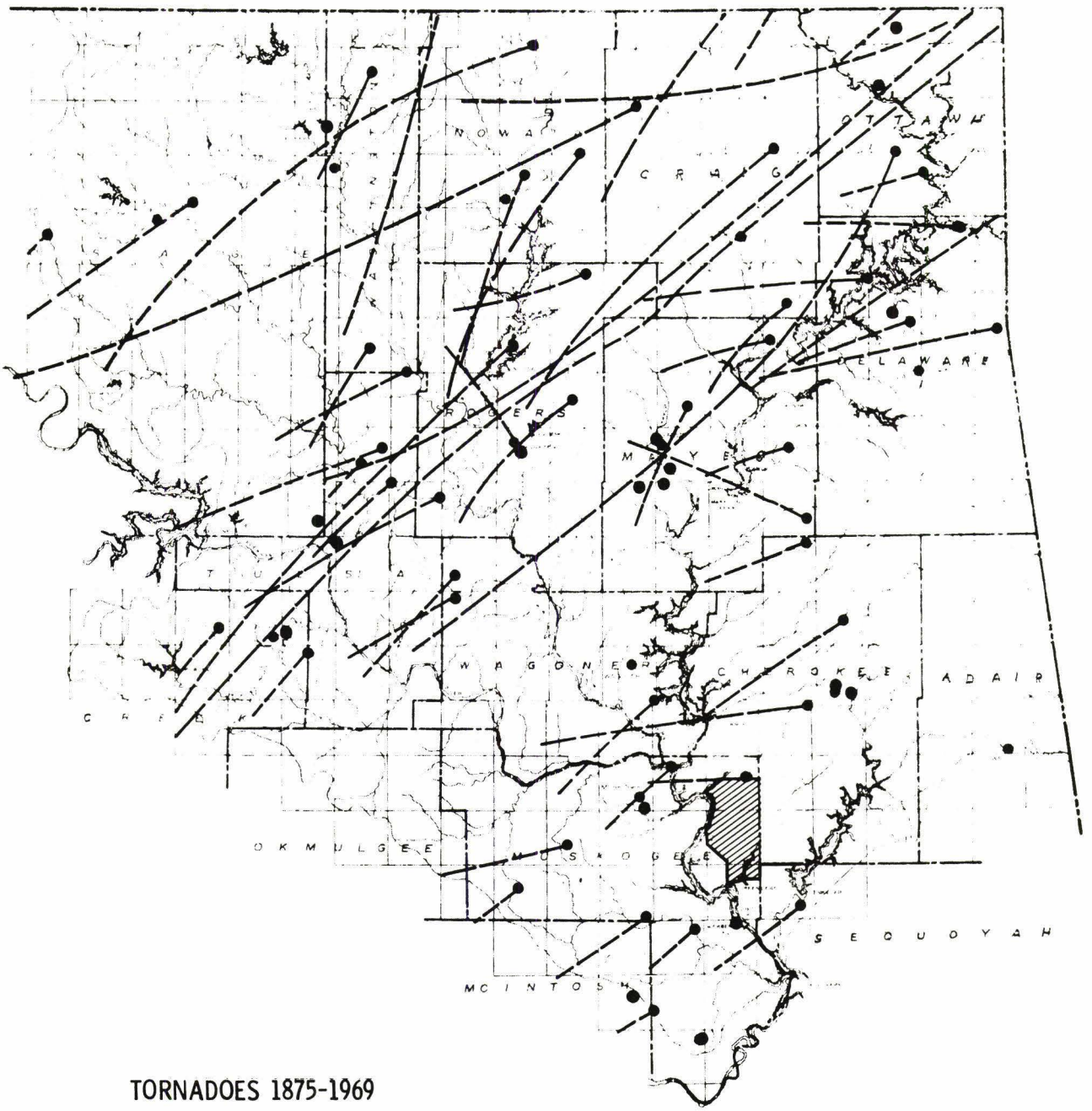
T Trace, an amount too small to measure
* Less than one-half day
** Base 65°F computed from average monthly temperature rather than the actual degree-day averages
# Greatest yearly

Note--First horizontal line of the table is average length of time for which records are available in years.

Total Precipitation at Fort Gibson Dam; in inches

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
1955	.91	2.69	3.79	2.98	5.60	3.35	3.42	5.08	4.31	1.93	.58	.46	35.10
1956	1.21	2.02	.78	2.55	4.04	6.31	4.25	.49	.36	2.36	3.37	2.43	30.17
1957	2.48	1.32	3.57	10.74	13.83	6.81	.99	4.20	7.34	1.12	3.38	2.31	58.09
1958	1.32	2.19	4.82	4.63	4.95	6.12	5.75	2.09	1.73	2.19	2.08	.72	38.59
1959	.25	1.54	4.58	4.27	6.14	3.81	7.46	3.02	7.15	5.81	4.06	3.98	52.07
1960	1.95	1.75	1.46	4.64	9.27	3.99	5.88	1.44	1.25	2.72	1.43	4.26	40.04
1961	1.33	2.69	3.94	1.37	5.62	4.59	10.04	2.57	4.57	4.11	4.01	1.96	46.80
1962	1.90	1.39	1.53	4.02	1.34	4.88	5.29	3.45	6.21	2.53	1.39	1.47	35.40
1963	.84	.46	2.58	3.26	3.73	1.77	3.84	1.52	3.70	0	2.17	1.51	25.38
1964	.61	1.93	3.83	3.36	4.13	5.32	.11	4.81	2.59	1.12	3.32	.76	32.09
1965	2.78	2.52	1.48	8.34	3.74	6.03	4.57	3.87	2.16	.00	.34	4.87	40.70
1966	1.51	4.01	1.33	7.21	3.12	3.28	.88	5.54	1.23	1.01	2.07	1.90	33.09
1967	1.50	.78	1.84	5.05	7.14	4.00	3.37	2.66	4.83	6.18	.89	3.17	41.41
1968	3.59	2.50	6.24	4.80	5.86	4.31	5.31	4.67	3.98	2.17	8.45	3.00	54.88
1969	4.89	2.49	3.73	5.61	3.41	3.84	.48	2.01	.58	8.87	.26	2.94	39.11
15 year average	1.80 15	2.02 15	3.03 15	4.86 15	5.46 15	4.56 15	4.11 15	3.16 15	3.47 15	2.81 15	2.52 15	2.38 15	40.19
23/24 year average	1.93 23	2.28 23	3.08 23	4.55 23	6.16 23	5.14 24	3.82 24	3.02 24	3.18 24	2.69 24	2.48 24	2.47 24	40.80

TORNADOES 1875-1969



TORNADOES 1875-1969

- LESS THAN FIVE MILES IN LENGTH
- GREATER THAN FIVE MILES IN LENGTH
- SITE AREA

A LIST OF THE MAJOR VEGETATIVE TYPES OBSERVED IN CAMP GRUBER OKLAHOMA

TREES, SHRUBS & VINES (BRUSH)

Acer negundo L. ACERACEAE
(box elder, ash leaved maple)

Occurs usually in alluvial ground along streams, river flood plains, low wet woods, and at the base of bluffs.

Carya illinoensis (Wang.) K. Koch JUGLANDACEAE
(pecan)

Occurs sporadically in old building sites and open fields, also along creek bottoms, margins of woodland areas where other trees have been cut away. Sometimes cultivated and forming groves in some areas of Camp Gruber.

Carya ovalis (Wang.) Sarg. JUGLANDACEAE
(false shagbark hickory, pignut, red hickory and small fruit hickory)

Occurs mostly in dry or upland, rocky or non-rocky woods, usually in acid soils derived from or overlying chert, flint, sandstone, or granite. Very common in the upland hardwood forested areas and wooded hillsides. This species is united with *C. glabra* by the Forest Service.

Catalpa speciosa Ward. BIGNONIACEAE
(catalpa, catawba tree, cigar tree, hardy catalpa, Indian bean)

Infrequent, sporadic in low alluvial woods generally along streams and base of bluffs, also in upland woods, and introduced in waste ground and streams.

Celtis laevigata Willd. ULMACEAE
(sugarberry — also called southern hackberry and smooth hackberry)

In Camp Gruber it is found on wooded hills, sporadically along roadsides as large trees. It also occurs in low wet or alluvial soils along streams, flood plains and bluffs.

Cephalanthus occidentalis L. RUBIACEAE
(buttonbush — also called globe flower, honeyball, swamp sycamore, and pond dogwood)

Occurs in low swamp woods and thickets, borders of creeks and in upland sinkhole ponds as observed in Camp Gruber.

Cercis canadensis L. LEGUMINOSAE
(redbud, Judas-tree)

Occurs in open woodland, borders of woods, thickets, limestone glades and openings and along rocky streams and bluffs. Scattered but common throughout Camp Gruber.

Cornus drummondi Meyer CORNACEAE
(rough-leaved dogwood)

Found mostly in low wet ground along ponds, streams, and at the base of bluffs. Also occurs in dry rocky woods, thickets, and limestone glades.

Diospyros virginiana L. EBENACEAE
(persimmon)

Waste fields and wood of hills and valleys. Very common in open fields — typically occurs in rocky or dry open woods, borders of woods, rocky glades, limestone, bald knobs, thickets and alluvial woods, and along streams.

Fraxinus americana L. var. *americana* *OLEACEAE*
(white ash)

Found in wooded hillsides and valleys, rich low woods along streams, slopes, base of bluffs, upland and rocky woods, and glades. Planted in some areas of the Camp.

Gleditsia triacanthos L. LEGUMINOSAE
(honey locust — also called honey shucks, and sweet locust)

Occurs usually in low rich woodland along streams and their valleys, but also on dry or upland slopes and pastures. Common but not as common as "black locust."

Ilex decidua Walt. AQUIFOLIACEAE
(possum haw, swamp holly — also called deciduous holly)

Observed growing on borders of upland and lowland ponds, and low wet woods along steams. Also occurs on upland limestone glades, rocky upland open woods and ledges.

Lindera benzoin (L.) Blume LAURACEAE
(spice bush)

Infrequent, occurs in low or moist woodland and thickets along streams, in valleys, ravine bottoms, base of bluffs, along creeks and seepage of wooded slopes.

Maclura pomifera (Raf.) Schneider MORACEAE
(osage orange, also known as bois-d'arc or bodark, bowwood, and hedge apple)

Occurs commonly in low alluvial woods in valleys, along streams, borders of woods, pastures, fence rows and in thickets. Cultivated in some areas of the Camp Gruber area, mainly in Section 24.

Morus rubra L. MORACEAE
(red mulberry)

Found along wood creeks and bluffs in Camp Gruber. Also occurs in rich woods, or open rocky places, either in lowland or upland, along roadsides, fields and pastures.

Parthenocissus quinquefolia (L.) Planch. VITACEAE
Virginia creeper, woodbine, five-leaved ivy-also called sourvine)

Common in open and rich woods, valleys, ravines, along rocky bluffs, thickets and fence rows.

Passiflora incarnata L. PASSIFLORACEAE
(maypops, apricot vine, and passion flower)

Occurs in sandy fields and thickets, fence rows, low alluvial woods, open waste ground, and along roadsides. Frequently found climbing in the trees on the borders of wooded areas.

Pinus echinata Mill. PINACEAE
(short leaf pine)

Rare in Camp Gruber, possibly planted.

Platanus occidentalis L. PLATANACEAE
(sycamore, planetree, also called buttonwood)

Occurs usually in valleys along streams, either on gravel bars or in alluvial soils of low or wet woodland, occasionally on moist places on upland slopes, bluffs and ridges.

Populus deltoides Marsh. SALICACEAE
(cottonwood)

Occurs in alluvial soils along streams and in low wet ground. Sporadic in occurence in Camp Gruber.

Prunus americana Marsh. ROSACEAE
(wild plum)

Occurs in woodland, pastures and thickets. Found in groves.

Prunus serotina Ehrh. ROSACEAE
(black cherry — Also known as rum cherry)
Occurs in low or upland woods, and along streams.

Quercus alba L. FAGACEAE
(white oak)

Occurs most frequently on dry upland slopes and ridges and also in low ground of valleys and ravine bottoms. Lesser of the oaks associated in the oak-hickory forested areas.

Quercus marilandica Muenchh. FAGACEAE
(black jack oak)

Occurs in acid soils on dry or rocky upland, often level woods or slopes, sometimes on rocky glades of sandstone, chert, or granite. Common oak growing in the predominate oak-hickory wooded areas along with post oak and hickory.

Quercus muhlenbergii Engelm. FAGACEAE
(chinquapin oak, yellow oak)

Wood valleys of creeks and on wooded hills — most frequently found in limestone rocky areas on bluffs or borders of glades and upland woods, and also in alluvial ground in valleys along streams or at the base of limestone bluffs or slopes.

Quercus shumardii Buckl. var. *schneckii* (Britt.) sarg. FAGACEAE
(shumard oak, water oak, spotted oak, red oak, and schneck oak)

One of the dominant tree species in dry and rocky situations on upland, on glades and edges of bluffs, and in rocky woods.

Quercus stellata Wang. FAGACEAE
(post oak)

One of the predominate oak species found in the heavily forested areas such as in dry or rocky upland woods and glades, and sometimes along small streams. Common in some of the brushy open hillside places. It makes up an abundant percentage of the oak hickory hardwood forest.

Quercus velutina Lam. *FAGACEAE*
(black oak, yellow-barked oak)

Scattered throughout the Camp area. Occurs often in acid thin soils, on rocky or dry sandy or upland slopes and ridges, rocky glades of sandstone, or granite.

Rhus aromatica Ait. ANACARDIACEAE
(fragrant sumac, also called pole-cat bush, and stinking hazel)

Infrequent in the Camp but occurs in rocky or open woods, thickets, rocky open glades and generally in acid soils.

Rhus copallina L. var. *latifolia* Engler ANACARDIACEAE
(dwarf sumac, winged sumac, shining sumac)

Open woods of hills — very common in open places and along roadsides. Abandoned fields and rocky sandstone, chert, and granite glades. Grows scattered as well as in patches.

Rhus glabra L. ANACARDIACEAE
(smooth sumac)

Occurs in upland thickets, abandoned fields, borders of openings of woods, and roadsides. Not as common

as winged sumac.

Robinia pseudo-acacia L. LEGUMINOSAE
(black locust and yellow locust)

Wooded hillsides, dry or rocky upland woods, along streams, roadsides, pastures, thickets and waste ground. Very common in the open brush areas, and open fields.

Rosa carolina L. ROSACEAE
(pasture rose, carolina rose)

Common in open fields, glades, thickets, clearings and along roadsides. Has persisting red berries readily frequent. Somtimes in association with coral berry in open fields.

Rubus sp. (L.) Bramble ROSACEAE
(blackberries, briars, raspberries)

Very common in waste fields, roadsides, fence rows, base of bluffs, banks of creeks and open wooded areas. Sometimes associated with coral berry in open fields.

Salix caroliniana Michx. SALICACEAE
(ward's willow)

Occurs along gravel bars, sandy gravel beds, and rocky banks of streams.

Salix nigra Marsh SALICACEAE
(black willow)

Occurs along borders of streams, ponds and usually in muddy alluvial soils. Common in the Camp. Also along banks of creeks and low fields.

Sassafras albidum (Nutt.) Nees LAURACEAE
(sassafras)

Common in association with persimmon, winged sumac, rough-leaved dogwood and occasionally with black locust. These make up the dominate brush in the open fields of Camp Gruber. Occurs in dry acid soils on the border of woods or rocky chert, sandstone or granite glades. Also in alluvial soils of valleys.

Smilax spp. L. LILIACEAE
(greenbrier, catbrier)

Two or three species were observed climbing upon the vegetation on wood hillsides and creeks. Also on the base of bluffs and valleys.

Symphoricarpos orbiculatus Moench CAPRIFOLIACEAE
(coral berry, Indian currant, buckbrush, buckberry)

Occurs very commonly in patches in pastured and dry or rocky woodland, old fields, thickets, rocky bluffs and the most abundant shrub under the hardwood forested areas. According to Steyermark 1963 and as observed in this investigation, this shrub often becomes thick in woodland that has been pastured and cut over as the dominant understory shrub, excluding the growth of other understory plants.

Ulmus alata Michx. ULMACEAE
(winged elm — also called wahoo)

Very common in open fields and along creek bottoms — most abundant tree in some ravine bottoms. Occurs in dry rocky upland woods, borders of rocky glades, along streams and in low ground of valleys. Generally in acid soils.

Ulmus americana L. ULMACEAE
(American elm — also called white elm)

Occurred usually along steams (creeks) and low moist ground. Not as common as *U. alata.* Also observed on wooded hillsides and along ponds.

Vitis vulpina L. VITACEAE
(frost grape, winter grape, chicken grape)

Observed in alluvial soils along streams in low wet woods, low wooded slopes, base of bluffs and thickets, also along roadsides of wooded hills.

A LIST OF THE MAJOR VEGETATIVE TYPES OBSERVED IN CAMP GRUBER OKLAHOMA

FORBS (weeds)

Agalinis tenuifolia (Vahl) Raf. SCROPHULARIACEAE

Occurs in dry open fields and moist areas scattered throughout the area.

Ambrosia artemisiifolia L. ASTERACEAE
(common ragweed, also called Roman wormwood, hogweed, bitterweed)

Occurs in waste and open ground, pastures, rocky glades, eroded broken ground, roadsides and cultivated fields. Not as common in Camp Gruber as western ragweed or lance-leaf ragweed.

Ambrosia bidentata Michx. ASTERACEAE
(Lance-leaf ragweed)

Occurs in prairies, fields, waste ground, borders of ponds, pastures, roadsides. Common in the Camp Gruber area. Predominant in some open fields as an invader. Open woods of hills. Fruits are eaten by wild turkey.

Ambrosia psilostachya T. & G. ASTERACEAE
(western ragweed)

Predominant plant species in some open fields as an invader. Occurs on dry rocky prairies, glades, pastures and roadsides.

Ambrosia trifida L. var. *texana scheele* ASTERACEAE
(horseweed, giant ragweed, great ragweed and buffalo weed)

Occurs mainly along roadsides in the Gruber area but is known from rich alluvial soils in thickets, low woods, along streams and ponds, waste ground and open fields.

Arundinaria gigantea (Walt.) Chapm. POACEAE
(switchcane, cane)

Valleys — heavy along the Little Greenleaf bank.

Asplenium platyneuron (L.) OAKES
(ebony spleenwort)

Occurs in shaded bluffs, open wooded slopes, mossy banks and rocky wooded ledges of all kinds of rocks but more commonly in sandstone, chert, and granite areas.

Boehmeria cylindrica (L.) sw. URTICACEAE
(False-nehle)

Occurs in swamp low spring-fed meadows, along spring branches and borders of small streams, and low wet woods, wooded creeks and alluvial woods in Camp Gruber.

Cassia fasciculata Michx. LEGUMINOSAE
(partridge pea)

Very abundant in Camp Gruber but sporadic in glades, along roadsides, and open thickets. Also in upland sandy fields.

Croton capitatus Michx. EUPHORBIACEAE
(woolly croton, hogwort)

Occurs scattered in open fields, pastures, waste ground and infrequently along roadsides in the Camp Gruber area.

Desmodium sp. Desv. LEGUMINOSAE
(tick trefoil, beggar's ticks, tick clover)

Very common in open fields, open dry or rocky woodland, rich woods, in lowland or upland, and along wooded bluffs. Valleys and ravine bottoms.

Diodia teres Walt. RUBIACEAE
(rough buttonweed)

Roadsides, open woods of hills, in waste areas, and sands of valleys. Mat under grasses in open fields in the Camp Gruber area. Also occurs in pastures.

Erigeron canadensis L. ASTERACEAE
(horseweed, Canada fleabane, hogweed)

Occurs in fields, rocky glades, waste ground, along roadsides, and occasionally in wooded open areas.

Eupatorium incarnatum Walt. ASTERACEAE
(pink eupatorium)

Occurs frequently in alluvial woods, or low moist woods, swamps, and along base of bluffs. Common along creeks in the Camp Gruber area.

Eupatorium perfoliatum L. ASTERACEAE
(boneset, also called thoroughwort)

Observed in ditches along roadsides and in the edge of open fields. Also along the border of ponds. Scattered in occurrence.

Gaura biennis L. ONAGRACEAE
(biennual gaura)

Occurs in glades, thickets, field openings in dry woodland, along with gravel and alluvial washes in valleys, and along roadsides. Sporadic in occurrence in the open fields of Camp Gruber.

Gnaphalium purpureum L. ASTERACEAE
(purple cudweed)

Occurs throughout in fields, thickets, rocky ledges, stream banks, and open woodlands.

Gutierrezia dracunculoides (DC.) Blake
(annual broomweed, broom snakeweed)

Waste areas and open valleys — very abundant on roadsides and in old building foundations in the Camp Gruber area, pastures and open woods. Occurs along roadsides on disturbed areas and overgrazed pastures. Poisoning may produce some dead or weak calves — unpalatable.

Helenium amarum (Raf.) H. Rock. ASTERACEAE
(bittersneezeweed, bitterweed or yellow dog fennel)

Very abundant in waste places, roadsides, pastures open fields and open woods. Poisonous, causing a cow grazing it to have bitter tasting milk.

Helianthus sp. ASTERACEAE
(sunflower sp.)

Abundant in alluvail woods but too deteriorated to identify to species.

Heterotheca latifolia Buckl. ASTERACEAE
(golden aster)

Roadsides and in fallow fields, roadsides, and waste areas, wooded hills.

Iva angustifolia Nutt. ASTERACEAE
(sumpweed)

Occurs in waste areas and open woods. Occurs in association with ragweed and may be confused with ragweed.

Lespedeza cuneata (Dumont) G. Don LEGUMINOSAE
(sericea lespedeza)

Scattered along roadsides and into the open fields of the Camp. Planted and now escaping from plantings and becoming naturalized in woodland, thickets, fields, prairies, open ground, borders of ponds and meadows.

Lespedeza striata (Thunb.) H. & A. LEGUMINOSAE
(Japanese lespedeza, common lespedeza)

Common throughout the Camp Gruber area, forms a mat below the grasses and forbs. Occurs in dry open woods, rocky open glades, sandy and rocky fields, along streams, roadsides and in waste places.

Lobelia cardinalis L.
(cardinal flower)

Occurs along muddy or gravelly borders of streams, in this case along Greenleaf Creek, section 25 on map. Also along low wet meadows and swampy meadows.

Opuntia compressa (salisb.) Macbr.
(prickly pear)

Occurs in rocky open glades, rocky prairies, sandy and gravelly washes of valleys along streams, fields, and open woods.

Perilla frutescens (L.) Britt. *LABIATAE*
(beaf-steak plant)

Wooded valleys of creeks, rich alluvial moist or dry ground. Along streams, often in pastured valleys and meadows, is the common type habitat for finding this plant in Camp Gruber.

Phytolacca Americana PHYTOLACCACEAE
(pokeweed, also known as poke)

Occurs in rich soils in waste ground, farm lots, about dwellings, fields and along roadsides. Scattered throughout the Camp Gruber area.

Polygonum hydropiper L. POLYGONACEAE
(water pepper, common smartweed, and pepper plant)

Occurs in fields, pastures, moist ground bordering, streams, ponds, and wet often logged woodland.

Rhus radicans L. ANACARDIACEAE
(poison ivy)

Occurs in several types of habitats, along fence rows, roadsides, waste ground, low and upland dry or wet woods, alluvial wet soils along streams, in valleys, rocky wooded slopes, ledges of bluffs and thickets. Some plants may have been poison oak since in some cases they appear very similar.

Salvia azurea Lam. var. *grandiflora* Benth. LABIATAE
(blue sage, pitcher's sage)

Occurs chiefly on limestone glades and sporadically in open fields. Herbaceous plant is palatable, nutritious and readily eaten by all classes of livestock. Range plant especially palatable during the early spring.

Solidago sp. L. ASTERACEAE
(goldenrod)

Two or three species were noted scattered throughout the Camp Gruber area in open fields, wooded hills and base of bluffs, also along roadsides. Sometimes in patches when observed.

Solidago speciosa Nutt. ASTERACEAE
(goldenrod)

Wooded hills, open prairies and dry rocky places of open woods.

Tephrosia virginiana (L.) Pers. LEGUMINOSAE
(goat's rue, catgut, hoary pea)

Woods of hills and in acid soils associated with chert,

sandstone or granite rocks. Sporadically occurring in open fields.

Tovara virginiana (L.) Raf. POLYGONACEAE
(jumpseed, Virginia knotweed)

Occurs in rich woodlands, base of bluffs and wooded valleys.

Verbascum thapsus L. SCROPHULARIACEAE
(mullein, flannel plant)

Occurs gregariously in dry fields, pastures, waste ground and very commonly along roadsides. This species is not eaten by livestock.

A LIST OF THE MAJOR VEGETATIVE TYPES OBSERVED IN CAMP GRUBER OKLAHOMA

GRASSES (POACEAE) AND SEDGES (CYPERACEAE)

Agrostis alba L.
(redtop)

Occurs in fields and waste ground, along wet meadows and in damp thickets along creeks. Not as common as purpletop in the area.

Andropogon gerardi Vitman
(big bluestem, bluejoint turkey foot)

Occurs in glades, open rocky woods. Less abundant in the Gruber area than little bluestem. It was very sporadic in occurence.

Andropogon scoparius Michx.
(little bluestem, broom, broom beardgrass)

Very common in Camp Gruber. Occurs in fields, glades, rocky open woods, abandoned fields, sandy open ground, waste places and along roadsides. Dominant grass species in some sections.

Andropogon ternarius Michx.
(split beard grass, paintbrush grass)

Very abundant in occurrence along roadsides, in open fields, rocky or sandy open woods or glades and especially on sandstone and chert exposures.

Andropogon virginicus L.
(broom sedge)

Common throughout and probably the most abundant grass in the Gruber area. Growing in open glades, pastures, sandy and abandoned fields and borders at open areas.

Aristida spp.
(triple-awned grass, three-awn grass)

Two or three species were noticed in Camp Gruber growing scattered in open fields, under wooded overstories, waste ground and glades. Primarily in open wooded areas.

Arundinaria gigantea (Walt.) Chapm.
(cane, switch cane)

Occurs along river banks and valleys — heavy along the Greenleaf River bank.

Carex spp. L.
(sedge)

Occurs frequently in moist fields and bottoms, also in dry open ground along stream banks. Two or three spp. were noticed.

Cynodon dactylon (L.) Pers.
(bermuda grass)

Most abundant in sandy soils, waste ground, and in overgrazed fields.

Elymus villosus Muhl.
(wild rye grass)

Rich or rocky woods, on slopes, ridges, alluvial wooded banks of streams, thickets, and sometimes along roadside. Very common ground species under the understory of wooded bluffs.

Eragrostis spectabilis (Pursh) Steud.
(purple love grass)

Very frequent in occurence along roadsides, fence-rows, sandy, rocky or open ground. It is the most widespread in the area.

Panicum virgatum L.
(switch grass)

Occurs in a variety of habitat, usually dry or moist areas, moist seepage of rocky glades and bluff escarpments. Two or three other panic species were observed in the area and were frequent in occurence; fields, wood hillsides and moist bluffs.

Paspalum floridanum var. *glabratum* Engelm.
(Florida paspalum)

Occurred occasionally in open fields in the Camp Gruber area. Also it infrequently occurred in glade areas.

Setaria spp. Beauv.
(foxtail grass)

Very common in the Gruber area along roadsides, in cherty ground, as a weed in waste places, fields and pastures and other open places. About two or three species were observed. Yellow foxtail, *Setaria glauca*, Prairie foxtail *S. geniculata* and green foxtail — *S. viridis*.

Sorghastrum nutans (L.) Nash
(Indian grass)

Very abundant in areas not grazed heavily and in glades, rocky open woods and along roadsides within Camp Gruber. Infrequent in overgrazed sections.

Sorghum halepense (L.) Pers.
(Johnson grass)

Weedy in occurrence and occupying areas in low meadows, fertile cultivated ground, at the base of wooded slopes and along roadsides. It didn't occur very often in the Camp Gruber area.

Sporobolus poiretii (R & S) Hitchoc.
(smut grass)

Sporadically occurring throughout the area in sandy or wet open soil, roadsides, along ditches and occasionally in open fields.

Tridens flavus (L.) Hitchc.
(purpletop, tall redtop)

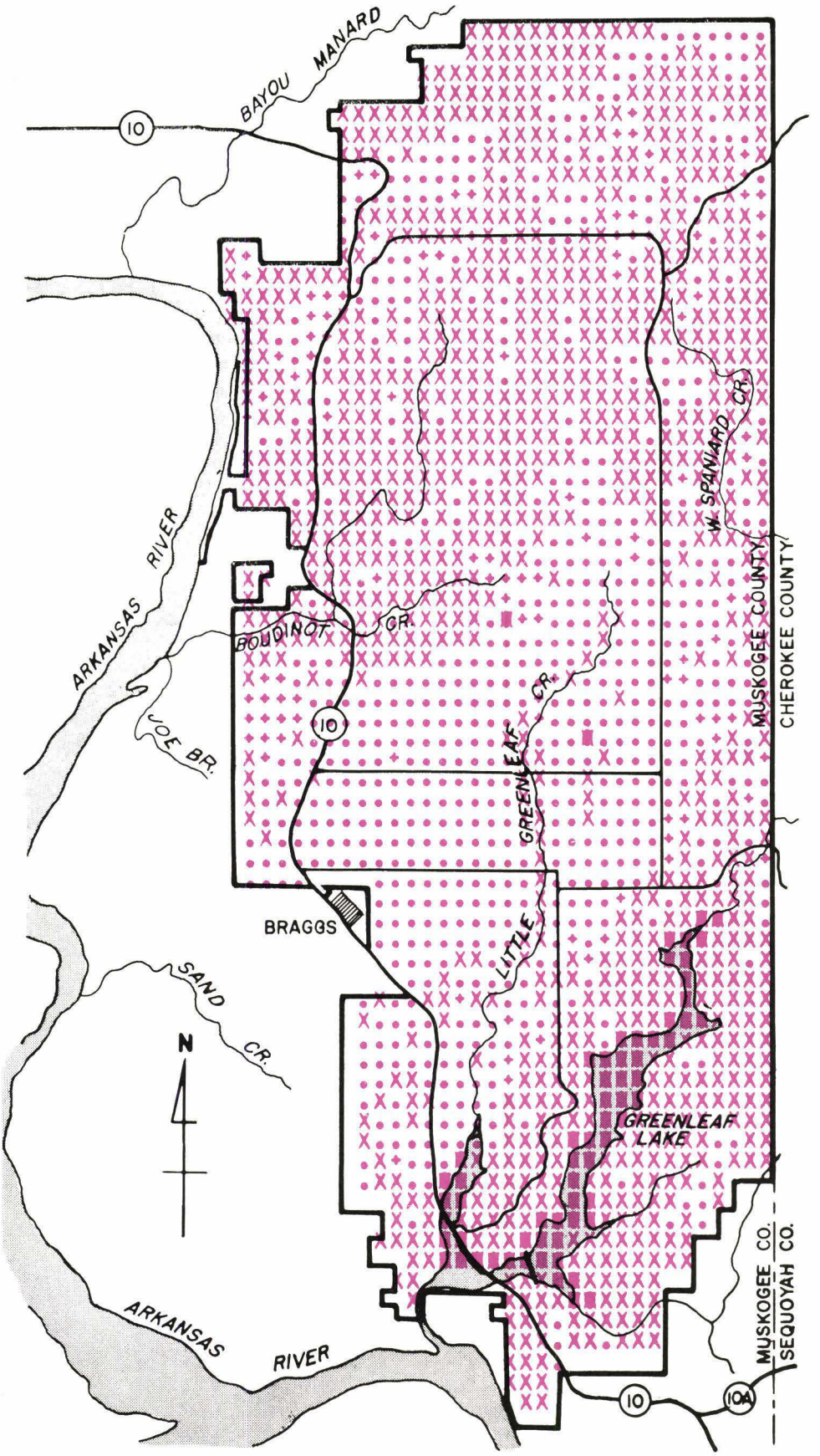
Common in fields, pastures, sandy open ground, rocky glades, waste ground and along roadsides. Abundance varied depending upon locality and grazing conditions. Less abundant in overgrazed areas.

Uniola latifolia Michx.
(broadleaf uniola, spike grass)

Common in rich woods or rocky slopes along streams, moist bluffs and alluvial soils. Often dominant grass occurring in wooded areas.

VEGETATIVE TYPES

The area is 53% Forested, 7% Brushy, and 36% Prairies and Glades. The remainder is Water.



LEGEND	SYMBOL
Prairies and Glades	• •
Brushy	◆ ◆
Forested	X X
Water	▮ ▮

FOREST INVENTORY TABLE

The tables that follow are intended for use in compiling forest resource estimates for groups of counties. Because the sampling procedure used by the Forest Survey in east Oklahoma was intended primarily to furnish inventory data for the region as a whole, estimates for individual counties have limited and variable accuracy. As county totals are broken down by various subdivisions, the possibility of error increases and is greatest for the smallest items. The order of this increase is suggested in the tabulations on page 17.

Table 34. *Land area and commercial forest by county, east Oklahoma, 1966*

County	All land	Commercial forest		County	All land	Commercial forest	
	Thousand acres	*Thousand acres*	*Percent*		*Thousand acres*	*Thousand acres*	*Percent*
Adair	364.8	237.9	65.2	McCurtain	1,183.5	874.5	73.9
Atoka	629.0	328.3	52.2	McIntosh	406.1	102.6	25.3
Cherokee	483.5	256.2	53.0	Mayes	424.3	118.0	27.8
Choctaw	499.5	261.0	52.3	Muskogee	523.6	77.9	14.9
Coal	336.6	108.0	32.1	Ottawa	297.1	78.4	26.4
Delaware	452.7	254.2	56.2	Pittsburg	834.4	217.6	26.1
Haskell	388.9	127.6	32.8	Pushmataha	910.7	693.0	76.1
Latimer	471.3	305.0	64.7	Sequoyah	445.6	116.0	26.0
Le Flore	1,004.0	661.2	65.9	All counties	9,655.6	4,817.4	49.9

Table 35. *Growing-stock volume by species groups and county, east Oklahoma, 1966*

County	All species	Softwood			Soft hardwood			Hard hardwood		
		Total	Pine	Other	Total	Gum	Other	Total	Oak	Other
	Thousand cords									
Adair	736	76	76	...	48	38	10	612	461	151
Atoka	814	179	179	...	57	...	57	578	273	305
Cherokee	882	44	44	...	78	17	61	760	415	345
Choctaw	1,103	29	29	...	296	218	78	778	453	325
Coal	383	...	...	...	25	...	25	358	133	225
Delaware	617	11	11	...	10	10	...	596	512	84
Haskell	590	43	43	...	269	...	269	278	109	169
Latimer	721	394	394	...	...	...	...	327	246	81
Le Flore	2,967	1,628	1,605	23	161	140	21	1,178	724	454
McCurtain	8,309	5,148	5,133	15	551	464	87	2,610	1,851	759
McIntosh	153	...	...	...	34	...	34	119	74	45
Mayes	388	51	51	...	61	15	46	276	194	82
Muskogee	192	3	3	...	4	...	4	185	91	94
Ottawa	334	...	...	...	...	...	...	334	283	51
Pittsburg	466	60	57	3	...	...	...	406	212	194
Pushmataha	3,403	2,245	2,220	25	106	85	21	1,052	772	280
Sequoyah	298	149	149	...	12	...	12	137	103	34
All counties	22,356	10,060	9,994	66	1,712	987	725	10,584	6,906	3,678

Sawtimber volume by species groups and county, east Oklahoma, 1966

County	All species	Softwood			Soft hardwood			Hard hardwood		
		Total	Pine	Other	Total	Gum	Other	Total	Oak	Other
	Million board feet									
Adair	70.7	14.0	14.0	..	7.7	7.7	..	49.0	27.2	21.8
Atoka	140.1	33.0	33.0	..	20.2	.	20.2	86.9	45.7	41.2
Cherokee	144.5	8.7	8.7	.	10.1	4.5	5.6	125.7	63.8	61.9
Choctaw	187.4	4.8	4.8	.	40.5	25.5	15.0	142.1	70.7	71.4
Coal	96.0	..	..	..	3.7	..	3.7	92.3	30.2	62.1
Delaware	106.4	4.2	4.2	..	3.3	3.3	..	98.9	85.1	13.8
Haskell	96.8	6.6	6.6	..	48.7	..	48.7	41.5	13.6	27.9
Latimer	101.2	64.4	64.4	..	..	..	..	36.8	30.8	6.0
Le Flore	547.8	402.1	401.0	1.1	32.8	25.9	6.9	112.9	78.1	34.8
McCurtain	1,843.4	1,397.5	1,394.1	3.4	92.0	77.6	14.4	353.9	248.3	105.6
McIntosh	29.9	.	..	..	6.9	.	6.9	23.0	14.7	8.3
Mayes	75.8	13.4	13.4	..	16.0	2.3	13.7	46.4	23.0	23.4
Muskogee	13.4	1.1	1.1	..	..	.	..	12.3	3.4	8.9
Ottawa	53.9	.	..	..	..	..	..	53.9	42.9	11.0
Pittsburg	80.8	8.8	8.8	..	..	..	..	72.0	40.7	31.3
Pushmataha	679.6	517.8	511.8	6.0	16.4	15.2	1.2	145.4	110.5	34.9
Sequoyah	41.5	32.2	32.2	.	..	..	..	9.3	4.9	4.4
All counties	4,309.2	2,508.6	2,498.1	10.5	298.3	162.0	136.3	1,502.3	933.6	568.7

Sawtimber volume by diameter classes and county, east Oklahoma, 1966

County	All species	Softwood			Soft hardwood			Hard hardwood		
		Total	9.0-14.9 inches	15.0 inches and up	Total	11.0-14.9 inches	15.0 inches and up	Total	11.0-14.9 inches	15.0 inches and up
	Million board feet									
Adair	70.7	14.0	14.0	..	7.7	7.7	..	49.0	39.5	9.5
Atoka	140.1	33.0	30.9	2.1	20.2	6.0	14.2	86.9	45.9	41.0
Cherokee	144.5	8.7	8.7	..	10.1	2.5	7.6	125.7	55.3	70.4
Choctaw	187.4	4.8	3.9	.9	40.5	25.8	14.7	142.1	63.5	78.6
Coal	96.0	..	..	..	3.7	1.5	2.2	92.3	34.2	58.1
Delaware	106.4	4.2	4.2	..	3.3	1.1	2.2	98.9	54.5	44.4
Haskell	96.8	6.6	4.5	2.1	48.7	33.1	15.6	41.5	24.5	17.0
Latimer	101.2	64.4	56.0	8.4	.	.	..	36.8	25.6	11.2
Le Flore	547.8	402.1	323.7	78.4	32.8	7.8	25.0	112.9	66.2	46.7
McCurtain	1,843.4	1,397.5	949.0	448.5	92.0	57.0	35.0	353.9	218.0	135.9
McIntosh	29.9	..	..	..	6.9	2.4	4.5	23.0	13.7	9.3
Mayes	75.8	13.4	12.3	1.1	16.0	3.3	12.7	46.4	20.8	25.6
Muskogee	13.4	1.1	..	1.1	..	..	..	12.3	7.8	4.5
Ottawa	53.9	..	..	..	..	..	..	53.9	32.3	21.6
Pittsburg	80.8	8.8	6.7	2.1	..	..	..	72.0	19.7	52.3
Pushmataha	679.6	517.8	397.4	120.4	16.4	4.7	11.7	145.4	77.1	68.3
Sequoyah	41.5	32.2	29.2	3.0	..	..	..	9.3	4.6	4.7
All counties	4,309.2	2,508.6	1,840.5	668.1	298.3	152.9	145.4	1,502.3	803.2	699.1

FOREST INVENTORY TABLE

MUSKOGEE COUNTY, OKLAHOMA , 1972

TABLE 1. OUTPUT OF INDUSTRIAL ROUNDWOOD BY PRODUCT AND SOURCE

SOFTWOODS

PRODUCT		STANDARD UNITS	ALL SOURCES	GROWING-STOCK TREES TOTAL	SAWTIMBER	POLETIMBER	ROUGH AND ROTTEN	SALVABLE DEAD	OTHER SOURCES
			THOUSAND CUBIC FEET						
SAWLOGS	M BD. FT.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VENEER LOGS	M BD. FT.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PULPWOOD	STD.CORDS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COOPERAGE	M BD. FT.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PILING	M LINEAR FT.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
POLES	M PIECES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COMMERCIAL POSTS	M PIECES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	M CU. FT.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALL INDUSTRIAL PRODUCTS	*******	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

HARDWOODS

PRODUCT		STANDARD UNITS	ALL SOURCES	GROWING-STOCK TREES TOTAL	SAWTIMBER	POLETIMBER	ROUGH AND ROTTEN	SALVABLE DEAD	OTHER SOURCES
			THOUSAND CUBIC FEET						
SAWLOGS	M BD. FT.	165.9	27.6	26.6	26.6	0.0	0.4	0.6	0.0
VENEER LOGS	M BD. FT.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PULPWOOD	STD.CORDS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COOPERAGE	M BD. FT.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PILING	M LINEAR FT.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
POLES	M PIECES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COMMERCIAL POSTS	M PIECES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	M CU. FT.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALL INDUSTRIAL PRODUCTS	*******	0.0	27.6	26.6	26.6	0.0	0.4	0.6	0.0

ALL SPECIES

PRODUCT		STANDARD UNITS	ALL SOURCES	GROWING-STOCK TREES TOTAL	SAWTIMBER	POLETIMBER	ROUGH AND ROTTEN	SALVABLE DEAD	OTHER SOURCES
			THOUSAND CUBIC FEET						
SAWLOGS	M BD. FT.	165.9	27.6	26.6	26.6	0.0	0.4	0.6	0.0
VENEER LOGS	M BD. FT.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PULPWOOD	STD.CORDS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COOPERAGE	M BD. FT.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PILING	M LINEAR FT.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
POLES	M PIECES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COMMERCIAL POSTS	M PIECES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	M CU. FT.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALL INDUSTRIAL PRODUCTS	*******	0.0	27.6	26.6	26.6	0.0	0.4	0.6	0.0

TABLE 2. TIMBER REMOVALS FROM GROWING STOCK ON COMMERCIAL FOREST LAND BY ITEMS AND BY SOFTWOODS AND HARDWOODS

PRODUCT	ALL SPECIES	SOFTWOOD	HARDWOOD
	MCF		
SAWLOGS	26.6	0.0	26.6
VENEER LOGS	0.0	0.0	0.0
PULPWOOD	0.0	0.0	0.0
COOPERAGE	0.0	0.0	0.0
PILING	0.0	0.0	0.0
POLES	0.0	0.0	0.0
POSTS	22.0	0.0	22.0
OTHER	0.0	0.0	0.0
FUELWOOD	438.0	0.0	438.0
ALL PRODUCTS	486.6	0.0	486.6
LOGGING RESIDUES	10.0	0.0	10.0
OTHER REMOVALS	141.0	0.0	141.0
TOTAL REMOVALS	637.6	0.0	637.6

TABLE 3. TIMBER REMOVALS FROM LIVE SAWTIMBER ON COMMERCIAL FOREST LAND BY ITEMS AND BY SOFTWOODS AND HARDWOODS

	ALL SPECIES	SOFTWOOD	HARDWOOD
	MBF		
SAWLOGS	155.8	0.0	155.8
VENEER LOGS	0.0	0.0	0.0
PULPWOOD	0.0	0.0	0.0
COOPERAGE	0.0	0.0	0.0
PILING	0.0	0.0	0.0
POLES	0.0	0.0	0.0
POSTS	25.0	0.0	25.0
OTHER	0.0	0.0	0.0
FUELWOOD	385.0	0.0	385.0
ALL PRODUCTS	565.8	0.0	565.8
LOGGING RESIDUES	21.1	0.0	21.1
OTHER REMOVALS	104.0	0.0	104.0
TOTAL REMOVALS	690.9	0.0	690.9

TABLE 4. OUTPUT OF INDUSTRIAL ROUNDWOOD BY PRODUCT AND SPECIES

PRODUCT	ALL SPECIES	ALL SOFTWOODS	PINE	OTHER SOFTWOODS	ALL HARDWOODS	OAKS	GUMS	OTHER HARDWOODS
	THOUSAND CUBIC FEET							
SAWLOGS	27.6	0.0	0.0	0.0	27.6	5.7	0.4	21.6
VENEER LOGS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PULPWOOD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COOPERAGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PILING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
POLES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COMMERCIAL POSTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALL INDUSTRIAL PRODUCTS	27.6	0.0	0.0	0.0	27.6	5.7	0.4	21.6

Ouachita National Forest
Camp Gruber
Range Examination Report

Camp Gruber has approximately 32,882 acres within the fenced areas. These areas are divided into seven allotments. The area has three distinct types of vegetation as far as range analysis is concerned. The largest type is called heavy brush or scrub oak-hickory. The oak-hickory has very little forage beneath the almost closed canopy of Blackjack oak, Post oak, Winged elm, Chinquapin oak, Sweet pignut and Wild pecan. There are many other associated species such as Cottonwood, Black willow, American elm, Box elder, Persimmon, Sassafras, Spicebrush, Redbud, Holly, Dogwood, Greenbrier, Poison ivy and Virginia creeper.

The prairies or open areas have a grass aspect and is the second largest type. The major grasses are Little bluestem, Splitbeard grass, Broomsedge, Big bluestem, Switchgrass, Florida paspalum, Purple love grass and Indian grass. Associated species found in the open areas are Persimmon, Blackberries, Winged sumac, Lanceleaf ragweed, common ragweed, various panicum grasses, *Western ragweed, Beggar's ticks, Annual broomweed.*

The third type is a light brush that is going from open grassland to the oak-hickory type. It has the same major grasses as the open areas and almost the same production. However the forage is not as available due to the brush such as Winged sumac, Persimmon, Blackberries, Virginia creeper, Maypops, Pasture rose, Sassafras, Buckbrush, Winged elm and Wild plum.

The major part of the grazing is done in the open areas or prairies. There are several areas that would benefit from using a prescribed burn to reduce the areas of light brush and even the areas of heavy brush (Oak-hickory type). This would help stop the open areas from going to brush and improve the habitat for both grazing of livestock and wildlife use.

Openings in the heavy brush could be made by allowing firewood to be removed or by injecting with a tree injector. This would benefit both wildlife and livestock.

Primary range was considered to be areas with:

More than 100 pounds of desirable forage per acre.

Areas that the livestock used.

All heavy brush areas were considered secondary range even if they occurred within the primary range areas. The livestock did not use these areas except just within the fringes. The areas of heavy brush were used as a loafing area and as a means to escape the heat and insects.

Secondary range was considered to be areas that were:

Open grassland that was not used by livestock and unless some method to get better distribution would be used.

Light brush areas that were not used by livestock.

Heavy brush areas.

Unsuitable range was considered to be areas that were:

Too steep for safe grazing without causing environmental problems. All steep areas were covered by heavy brush.

Areas covered by water — Greenleaf Lake, Arkansas River backup caused by Webbers Falls lock and dam. Areas within the containment area that were paved or with concrete footings that excluded livestock.

The estimates of grazing use may be in error because of the lack of cages or other fenced plots. There was no way to compare the production of enclosed areas (ungrazed) to the grazed plots. Cages should be placed in the heavier use areas before the grazing season starts. Then at the end of the grazing season the caged plots and corresponding plots outside the caged plots should be clipped to determine the use. This should be done before very much reliance can be made on the animal unit months estimates.

The grazing lease issued by the Department of the Army showed grazing in Allotment No. 1 (Army Division 1), Allotment No. 4 (Army Division No. 2), Allotment No. 5 (Army Division No. 3), and Allotment No. 7 (Army Division No. 4). The lease permitted 1,955 animal unit months or 391 head of mature cattle for a five month period (April 1 to August 31).

The analysis showed that Allotments No. 1, No. 3, No. 4, No. 5, No. 6, and No. 7 could be used for grazing. The estimated capacity with a proper use of 30% was 3,570 animal unit months or 712 head of mature cattle for the five month period. This amount would only be available under better distribution of the livestock and improved management by the permittee.

Allotment Reports

Allotment No. 1 has 18,001 acres within the exterior boundaries. Approximately 5,450 acres are open grassland.

Some of the area in sections 13, 14, 15, 16, 11, and 12 have been overgrazed in the past. This is shown by the heavy concentrations of Lanceleaf rag-

weed — Ambrosia bidentata, common ragweed — Ambrosia artisiifolia, Panicum species, Beggar's ticks — Desmodium species, and annual Broomweed — Gutierrezia dracuneuloides. During the past year the area has received light to moderate grazing. Under this type use the area should respond and improve. Also areas of brush are expanding and this could be checked by prescribed burning. The areas of light brush, approximately 2,582 acres could be treated by prescribed burning to reduce the brush. If this is not done these areas will become heavy brush and will not have very much forage available for grazing.

The heavy brush areas over the entire area is considered secondary range. The open grassland and light brush areas north of a line east and west along sections 33, 34, 26 and 25 are at present secondary range. This is approximately 1,196 acres of open grassland, 1,082 acres of light brush and 8,221 acres of heavy brush. This area gets very light to no use at the present. To effectively use this area it would require a fence across the allotment to divide it into north and south divisions or pastures. By doing this the livestock could be rotated and better use made of the secondary range.

There is 2,498 acres of unsuitable area in Allotment No. 1. This is mostly very steep areas which would be unsuitable for livestock even if the heavy brush were removed.

To improve the area for grazing as well as wildlife use, openings should be made in the large areas of heavy brush. This could be done by allowing firewood to be cut in certain areas if there is a demand for this type of product. The area also could be treated by injector to reduce the heavy brush.

Allotment No. 1 had 1,525 animal unit months of permitted grazing during the current grazing season. This would be 305 head of mature cattle or a larger number of yearlings for a five month period. The use averaged about 27% of current growth in the main use areas (Primary range) within sections 1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, 35, and 36. The use ranged from 0 to 60%.

The analysis showed that an estimated 2,563 animal unit months could be grazed with proper distribution and use. This would allow 512 head of mature cattle for a five month period. This would only be possible if the grazing use is better distributed over the area.

This could be done by adding some additional watering facilities, moving the salting areas away from the watering facilities and doing some moving of livestock to areas of light use. The analysis included some areas in primary range that were receiving light to no use and this raised the total number of estimated animal unit months available.

If the present management of grazing use continues the total number of animal unit months actually available will be closer to the permitted number of 1,525 animal unit months instead of the 2,563 animal unit months that the analysis shows could be grazed.

Allotment No. 2 has 1,325 acres within the exterior boundaries. This area was not used for grazing during the past year. All of the area was considered either in secondary range or in unsuitable range.

The analysis showed a total of 82 animal unit months or 16 head of mature cattle for five months in the open grassland, and light brush areas. Without opening up some of the heavy brush and prescribed burning of the light brush areas this would not be a good grazing area.

Allotment No. 3 has a total of 1,436 acres. The open grassland has 528 acres and the light brush area has 333 acres. This makes 861 acres in primary range with a total of 321 estimated animal unit months or 64 head of mature cattle for five months. This area was not used for grazing during the past year. The area shows evidence of past overgrazing by the many weeds, other annual grasses and undesirable perennial grasses. This area could benefit from prescribed burning to improve the area for grazing.

Allotment No. 4 has 2,634 areas within the exterior boundaries. Approximately 2,362 acres are open grassland. This area is within the cantonment area of Camp Gruber which received heavy military use during the life of Camp Gruber as a military base. This heavy use resulted in a reduction of desirable forage species and an increase of undesirable species such as Western ragweed, various Panicum grasses, Broomsedge, and annual Broomweed. There is evidence that the better forage species are returning. Many of the asphalt paved areas are cracking and Indian grass, Little bluestem, Purple top, Broomsedge, and Split beard grass are invading the area.

This allotment had 200 animal unit months of permitted grazing during the current grazing season. This would be 40 head of mature cattle or a larger number of yearlings. The analysis showed that there was an average use of 35%. The analysis also showed that there was 678 estimated animal unit months of grazing available. The only problem with this estimate is that a large amount of this production is in undesirable forbs and grasses which the livestock will not use. If the production had been in all good desirable forage species it could have supported 135 head of mature cattle. The 200 animal unit months is nearer to the correct

grazing capacity and this may be too high to allow the area to recover properly. The area near the corrals was overgrazed. The area inside the corral pasture was overgrazed due to holding livestock from other allotments before loading to move them to other areas. The corral area should not be considered in the grazing capacity. As with any grazing system the estimates are only estimates or a starting point that you should adjust for undesirable forbs, or other effects. After the adjustments then put livestock in and graze the area to proper use. The method of management will determine how much of the available forage is actually used and where it is used. The area that is actually used then becomes the primary range unless you change the management.

Allotment No. 5 has 1,607 acres within the exterior boundaries. It also has a small pasture fenced separately which could be used as a holding area. There are 867 acres of open grassland and 133 acres of light brush which make up the primary range area.

The analysis showed a total of 412 animal unit months or 82 head of mature cattle for five months. This estimate is too high because about 30% of the production weighed was undesirable forbs and grasses that the livestock will not use. By taking off the 30% undesirable forbs and grasses, you would have about 288 animal unit months or 57 head of mature cattle.

There was 140 animal unit months of permitted grazing during the current grazing season. This use averaged 26% over the entire area. The use ranged from 0 to 55%.

The area needs about 200 acres of prescribed burning to improve the area for grazing.

Allotment No. 6 has 6,174 acres within the exterior boundaries. There are 498 acres of scattered open grassland areas and 213 acres of scattered light brush areas that make up the primary range areas. There are 2,278 acres in secondary range and 3,185 acres in unsuitable areas. The unsuitable is in steep areas and Greenleaf Lake.

The analysis showed a total of 219 animal unit months or 43 head of mature cattle for five months. This would be very difficult to reach without having the livestock in three herds or moving one herd about three times to utilize the scattered open and light brush areas. The effective primary areas would probably be only a third of the 219 animal unit months. This area was not grazed under a permit during the current grazing season. There was evidence of either trespass cattle or an error in the information we received as to permitted livestock. Grazing use in Section One reached 70% near the water hole on the north side of the opening.

Allotment No. 7 has 1,705 acres divided into three separate areas. There are 646 acres of open grassland and seven acres of light brush that make up the primary range.

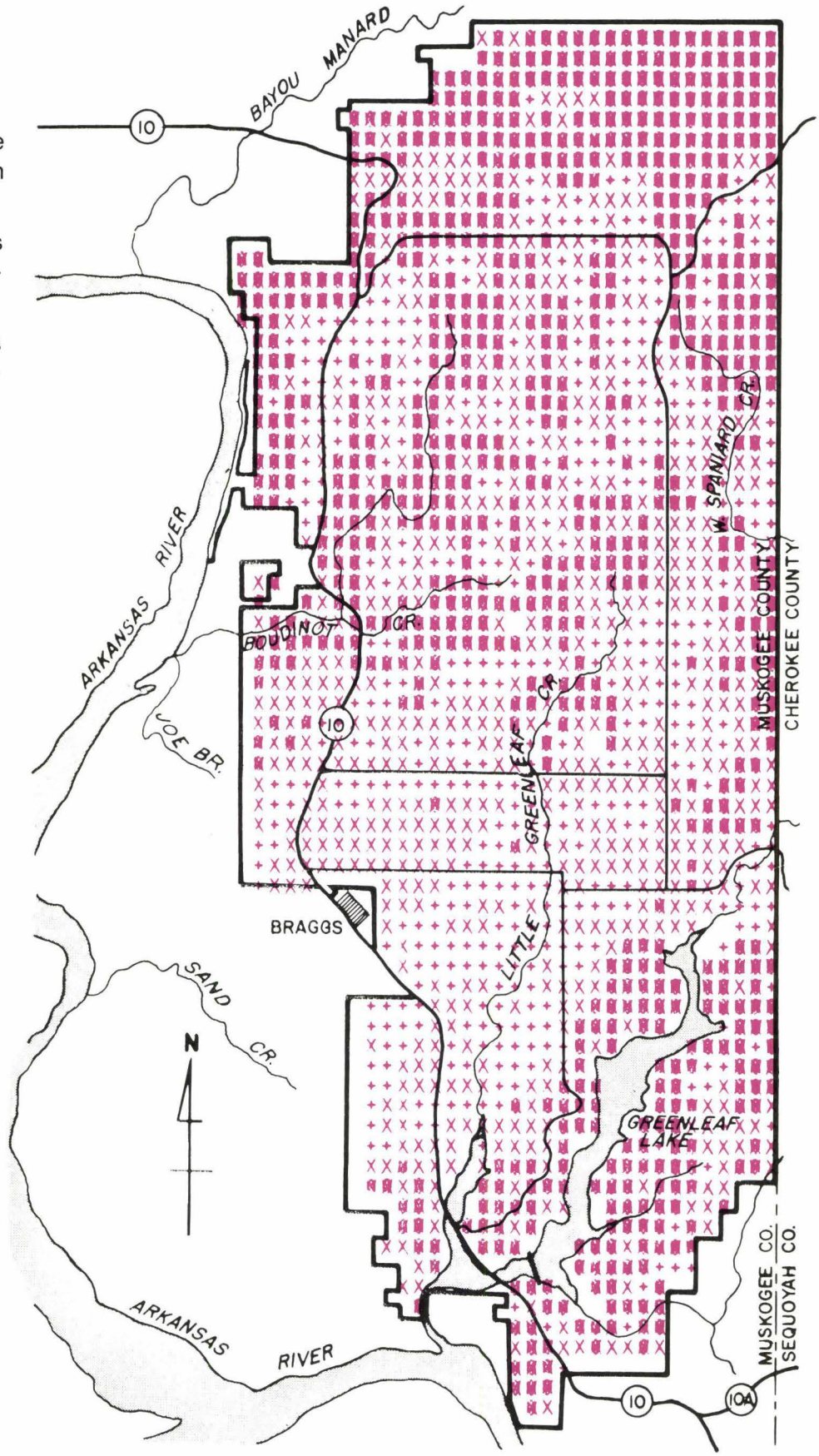
The analysis showed a total of 239 animal unit months or 47 head of mature cattle for five months. The analysis also showed that 48% of this production was in undesirable forbs and grasses which the livestock will not use to any extent. This would reduce the number of animal unit months to 125 and number of head to 25 for a five month period. The area showed an average use of 30% and it ranged from 20% to 50%. There was 90 animal unit months of permitted grazing during the current grazing season. The area needs about 100 acres of prescribed burning to improve the area for grazing.

SOIL EROSION POTENTIAL

24% or 7711 Acres of the area has slight soil erosion potential.

33% or 10373 Acres has moderate soil erosion potential.

43% or 14064 Acres has severe soil erosion potential.



LEGEND

Slight
Moderate
Severe

SYMBOL

CONCLUSIONS FROM FEDERAL ENERGY ADMINISTRATION STUDY

A preliminary study has been made of the feasibility of siting a large complex of energy facilities at Camp Gruber. An important aspect of this study was estimating the impact of an energy center on the surrounding region.

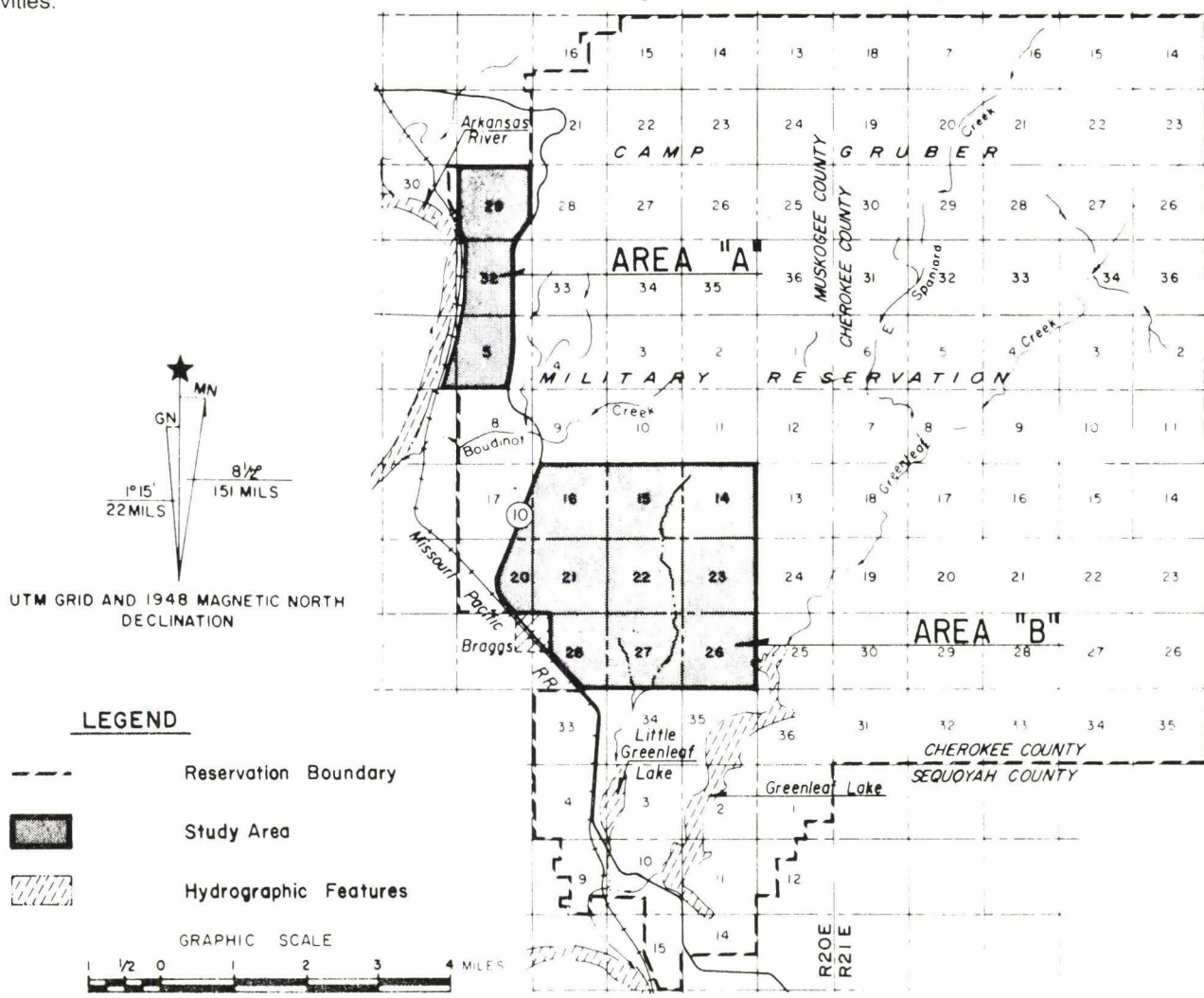
Camp Gruber appears to be a satisfactory site for many types of energy facilities. The size of the complex would probably be limited primarily by the amount of high quality water available for use. Most energy facilities probably could be sited at Camp Gruber with minimal impact because of the Camp's favorable environmental characteristics and because the facilities would have to be built in accordance with all applicable environmental, health, and safety standards. Based on a preliminary survey, most local residents appear to accept what they perceive to be the environmental and socioeconomic impact of the energy center. Since a portion of Camp Gruber is used by the public for recreational activities such as hunting, plans for an energy center should include the objective of minimizing interference with these activities.

The study identified two topics as needing further investigation and planning:

1. Obtaining enough water for an energy center. This could be in the form of a comprehensive water supply and allocation plan for eastern Oklahoma. The plan should include a way of supplying the energy center with an adequate amount of water.

2. Preparing an energy center development plan. Establishing an energy center and reaping the maximum benefits with minimum environmental impact calls for an administrative plan for its development. The plan for Camp Gruber should include: a determination of the best administrative structure for promotion and development of the center, and performance of research necessary to decide the types of facilities best suited to the Camp.

Whether or not an energy center ought to be sited at Camp Gruber was not the subject of this study. That question will presumably, be the subject of future study and discussion within the State of Oklahoma.

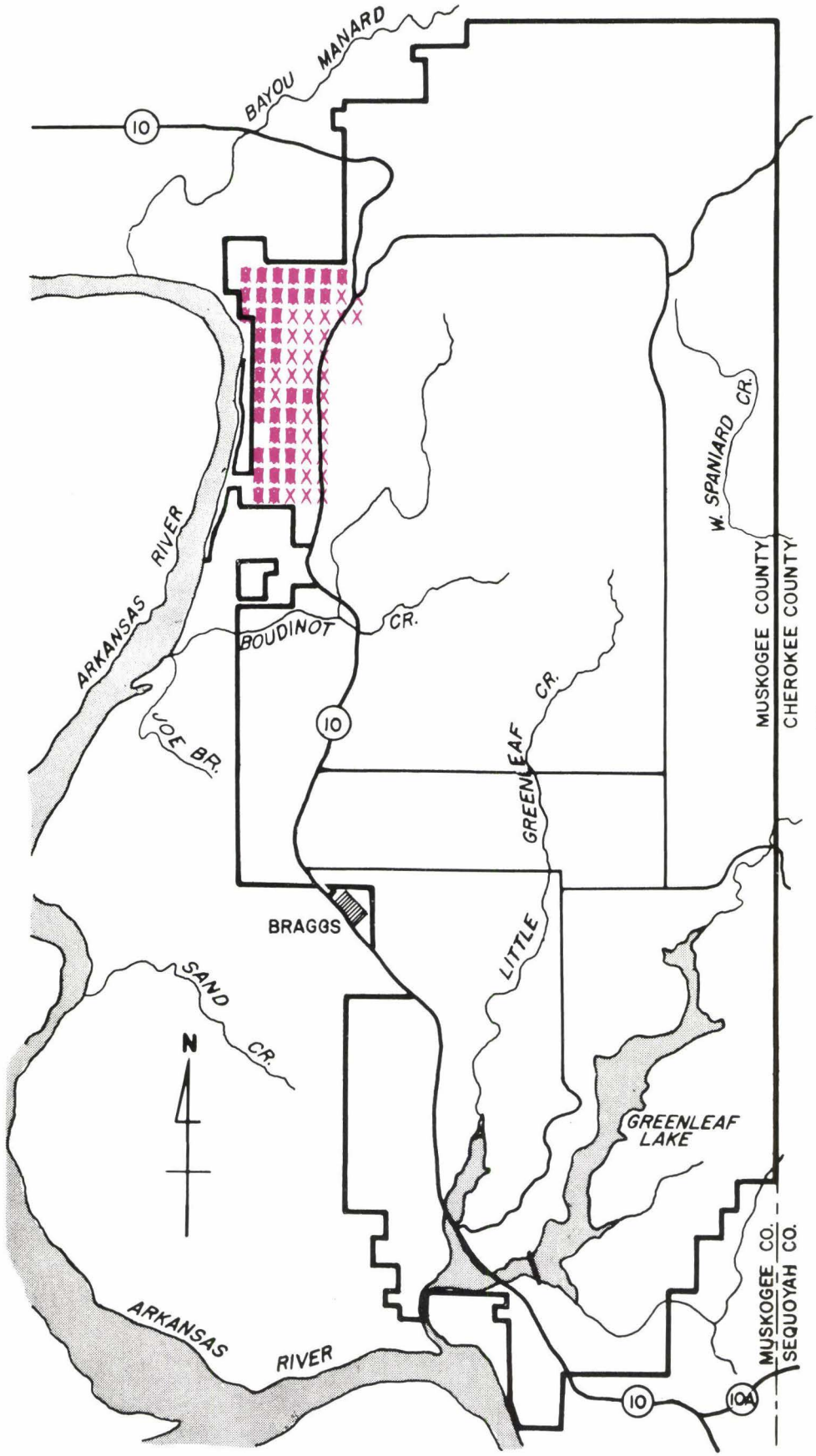


SITE 1

SOILS ANALYSIS

To determine degree of soil limitations for light industry.

This area has 551 Acres with moderate limitations for light industry. The remainder of the area has severe soil limitations.



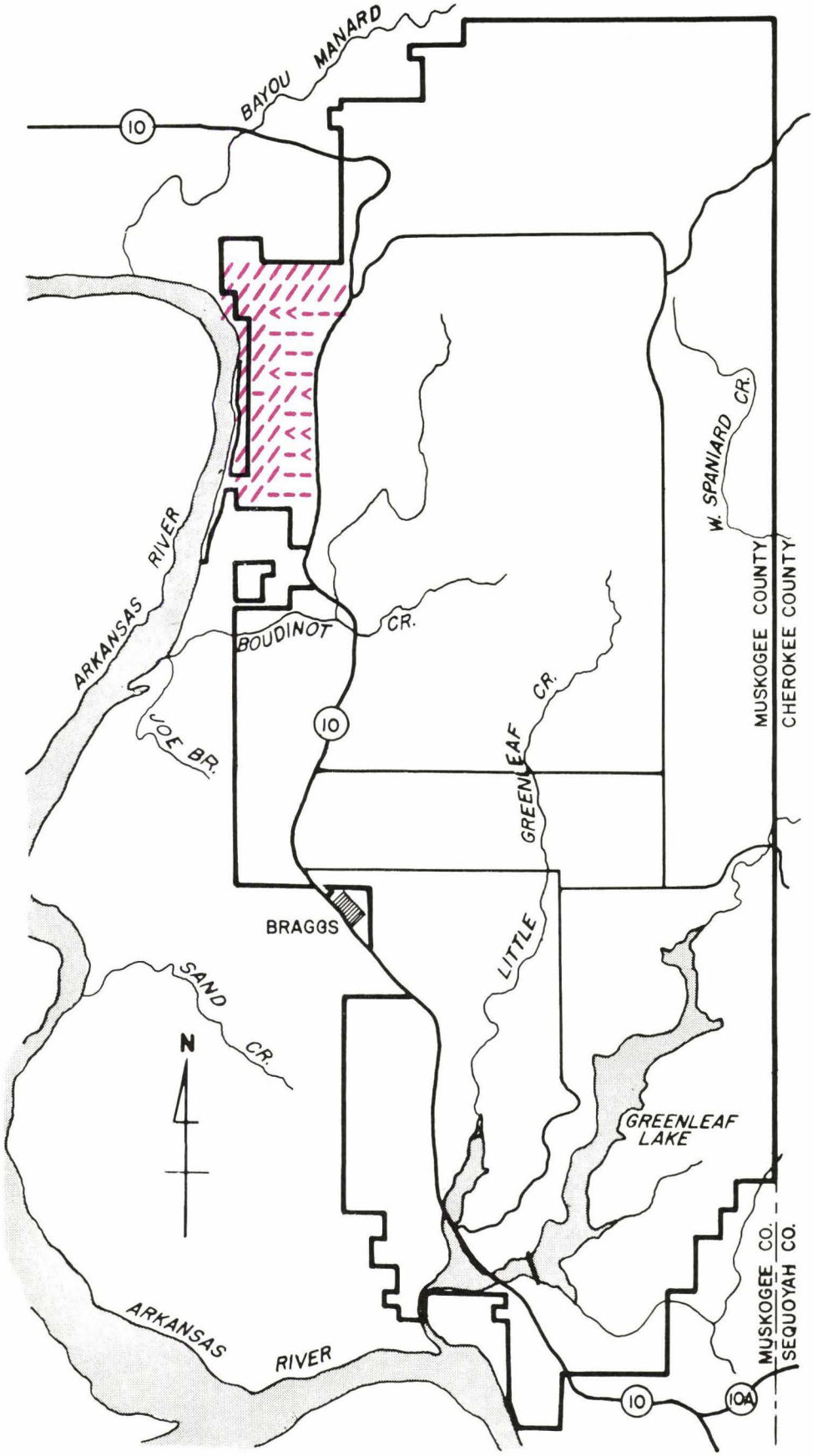
LEGEND

	SYMBOL
Severe	■■
Moderate	XX

SITE 1

ANALYSIS OF SLOPE CLASS

1. The area is 1230 Acres in size.
2. 349 Acres are 0-2% slope class or 29% of the total area.
3. 129 Acres are in the 3-5% slope class or 11% of the area.
4. 73 Acres are in the 6-10% slope class on 6% of the area.
5. The remainder of the area has a slope greater than 10% which would not be suitable for building industrial type structures without considerable expense.
6. The eastern part of the area has the most level land.



LEGEND

Slope Class

1. 0-2%
2. 3-5%
3. 6-16 and up%

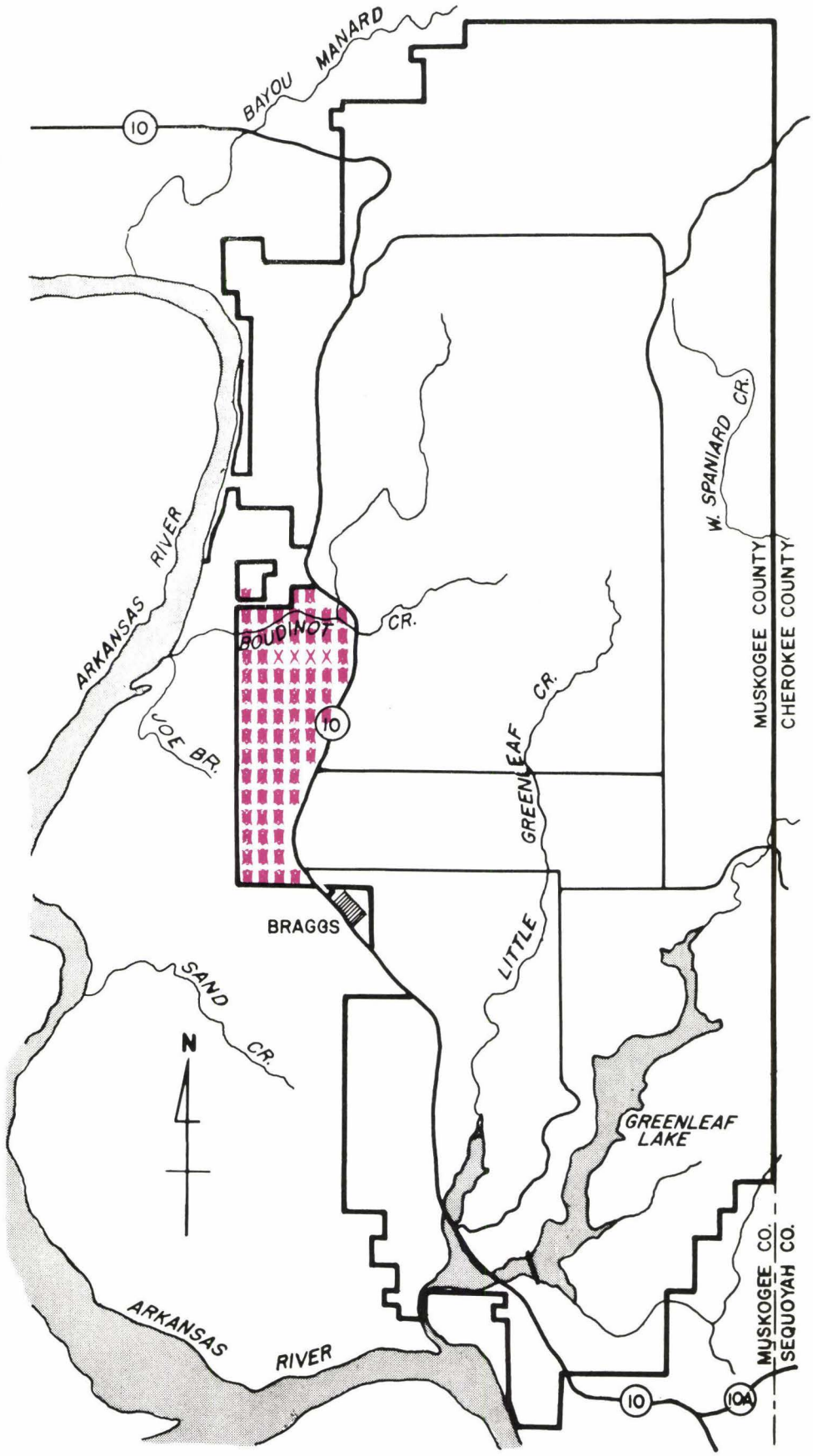
SYMBOL

SITE 2

SOILS ANALYSIS

To determine degree of limitations for light industry.

This area has 73 acres with moderate limitations remainder, has severe limitations.



LEGEND

Severe

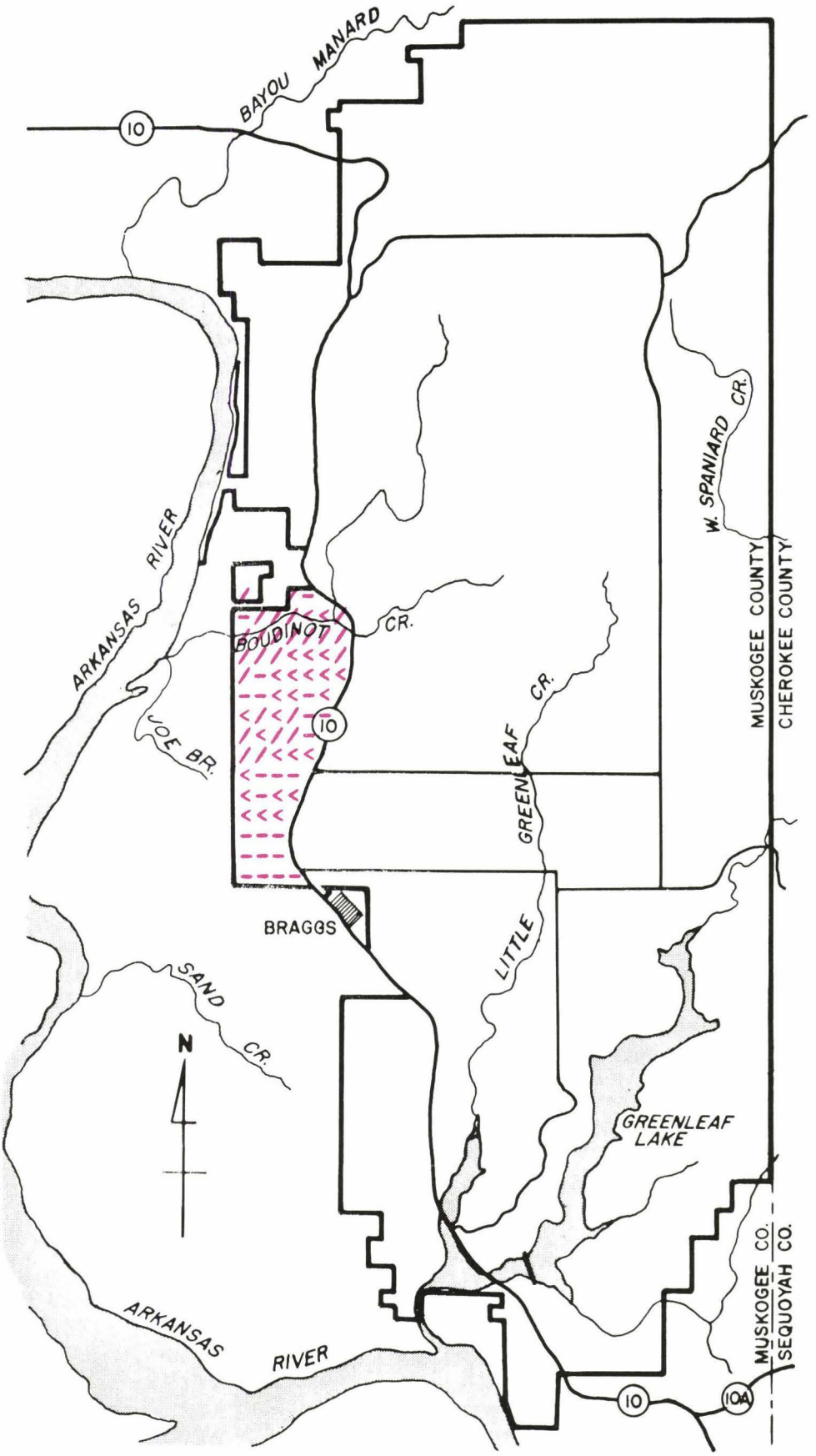
Moderate

SYMBOL

SITE 2

ANALYSIS OF SLOPE CLASS

1. The area is 1358 Acres in size.
2. 422 Acres are in the 0-2% slope class or 32% of the total area.
3. 477 Acres are in the 3-5% slope class or 35% of the area.
4. 220 Acres are in the 6-10% slope class or 17% of the area.
5. The remainder has slopes over 10% grade which would not be suitable.
6. Generally the southern ⅔ of the area has the lowest grade.



LEGEND

Slope Class

1. 0-2%
2. 3-5%
3. 6-16 and up %

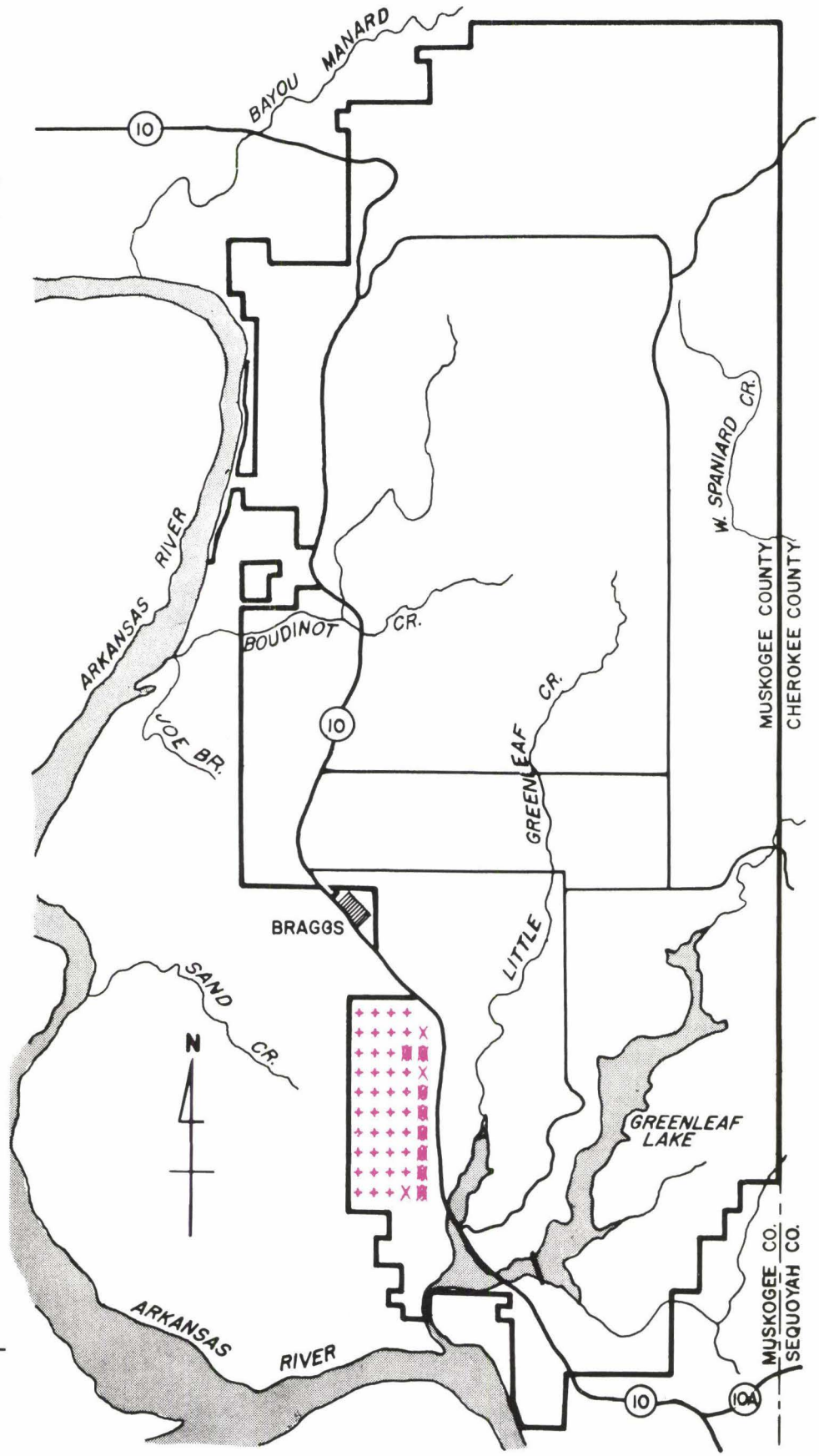
SYMBOL

SITE 3

SOILS ANALYSIS

To determine the degree of soil limitations for light industry.

This area has 698 acres with slight limitations and 55 acres with moderate limitations. The remainder has severe soil limitations.



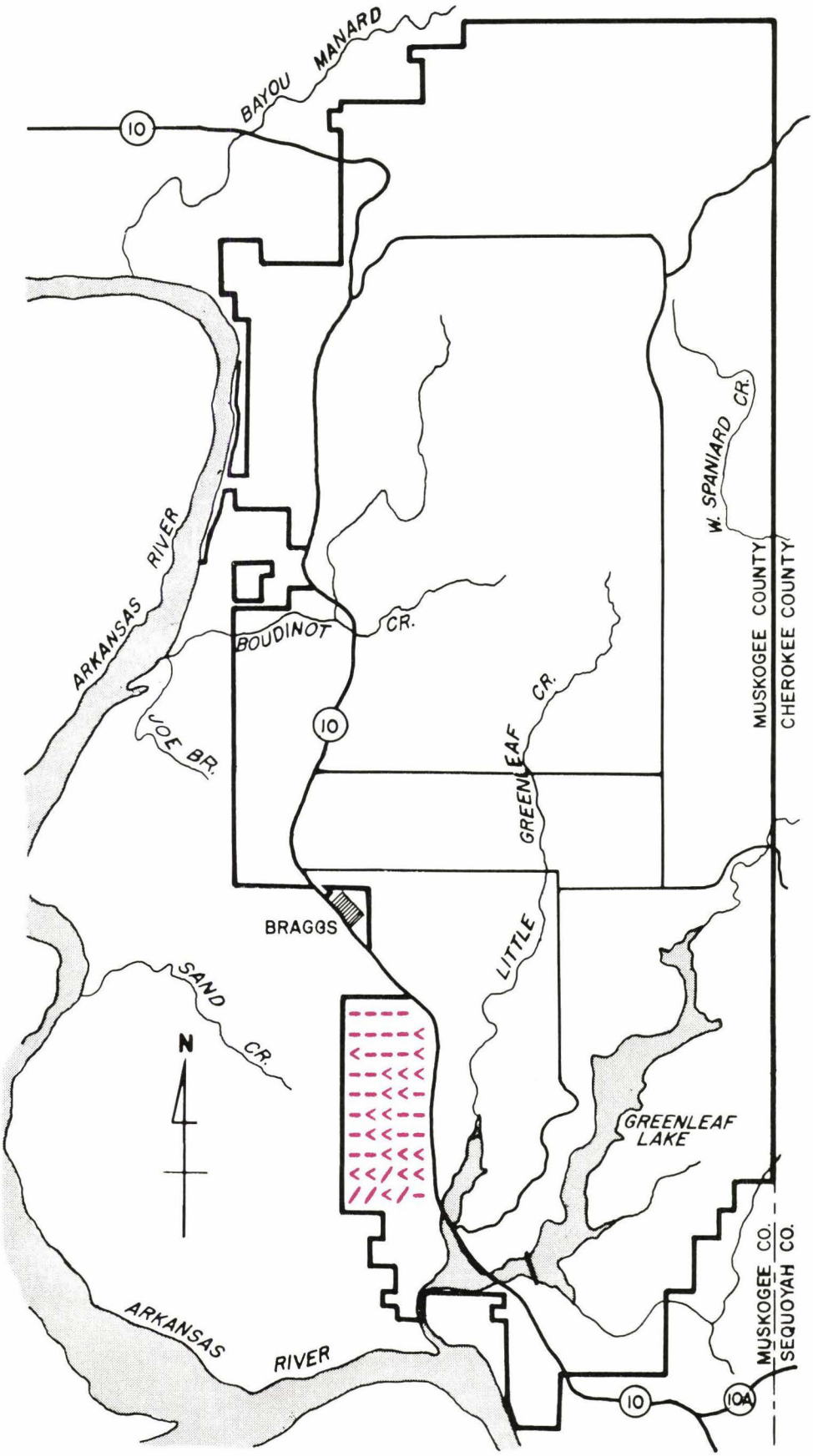
LEGEND

	SYMBOL
Severe	▮▮
Moderate	X X
Slight	+ +

SITE 3

ANALYSIS OF SLOPE CLASS

1. This area is 899 Acres in size.
2. 459 Acres are in the 0-2% slope class or 51% of the area.
3. 367 Acres are in the 3-5% slope class or 41% of the area.
4. The remaining 73 acres are in the 6-10% slope class.
5. Generally the North 90% of the area is level enough for industrial development.



LEGEND

Slope Class

1. 0-2%
2. 3-5%
3. 6-16 and up %

SYMBOL

SITE 3
EXPANDED

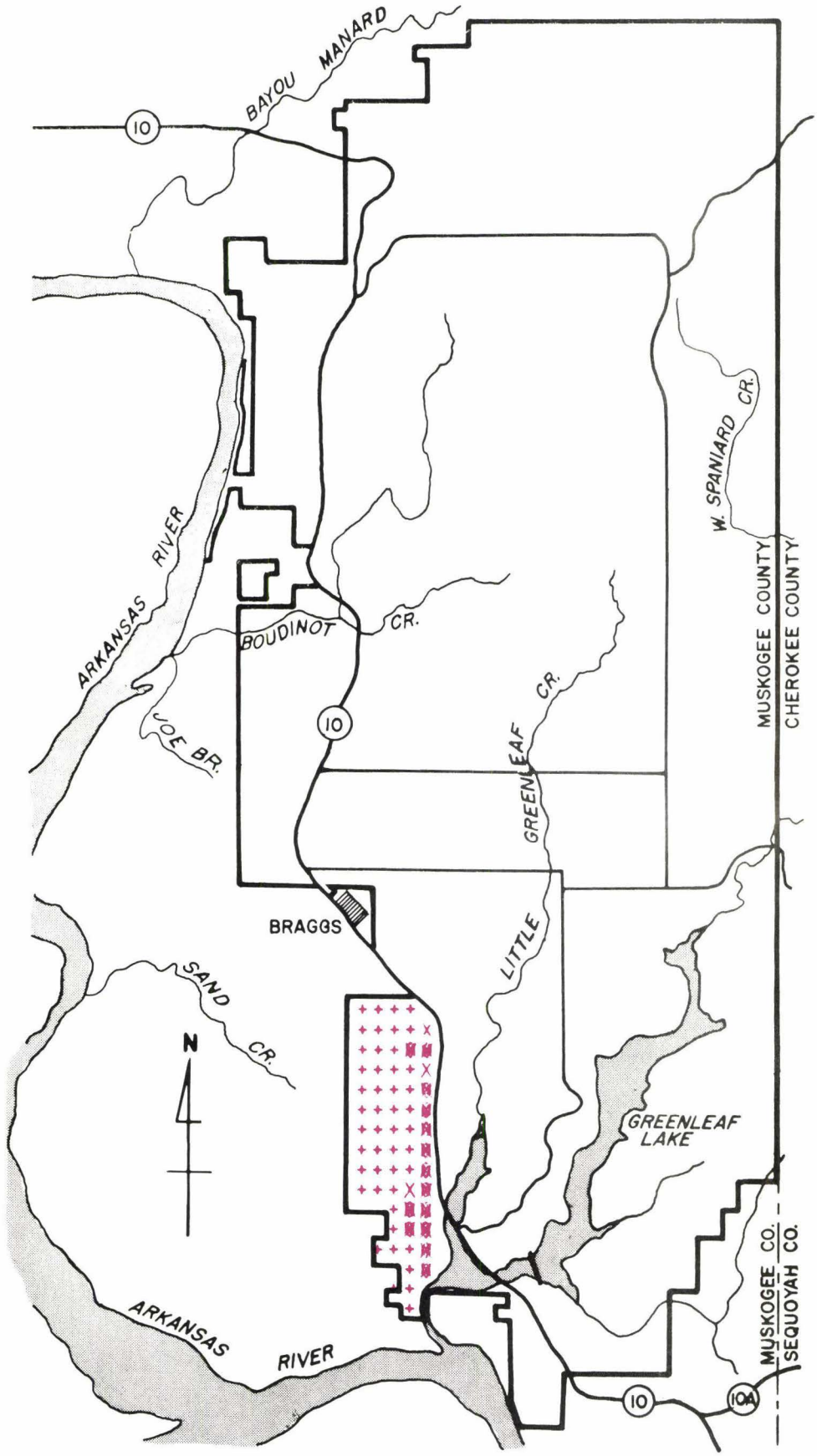
SOILS ANALYSIS

The area is 1175 Acres in size.

863 Acres have slight soil limitations for light industry.

55 Acres have moderate limitations.

257 Acres have severe soils limitations.



LEGEND SYMBOLS

Slight limitations ++

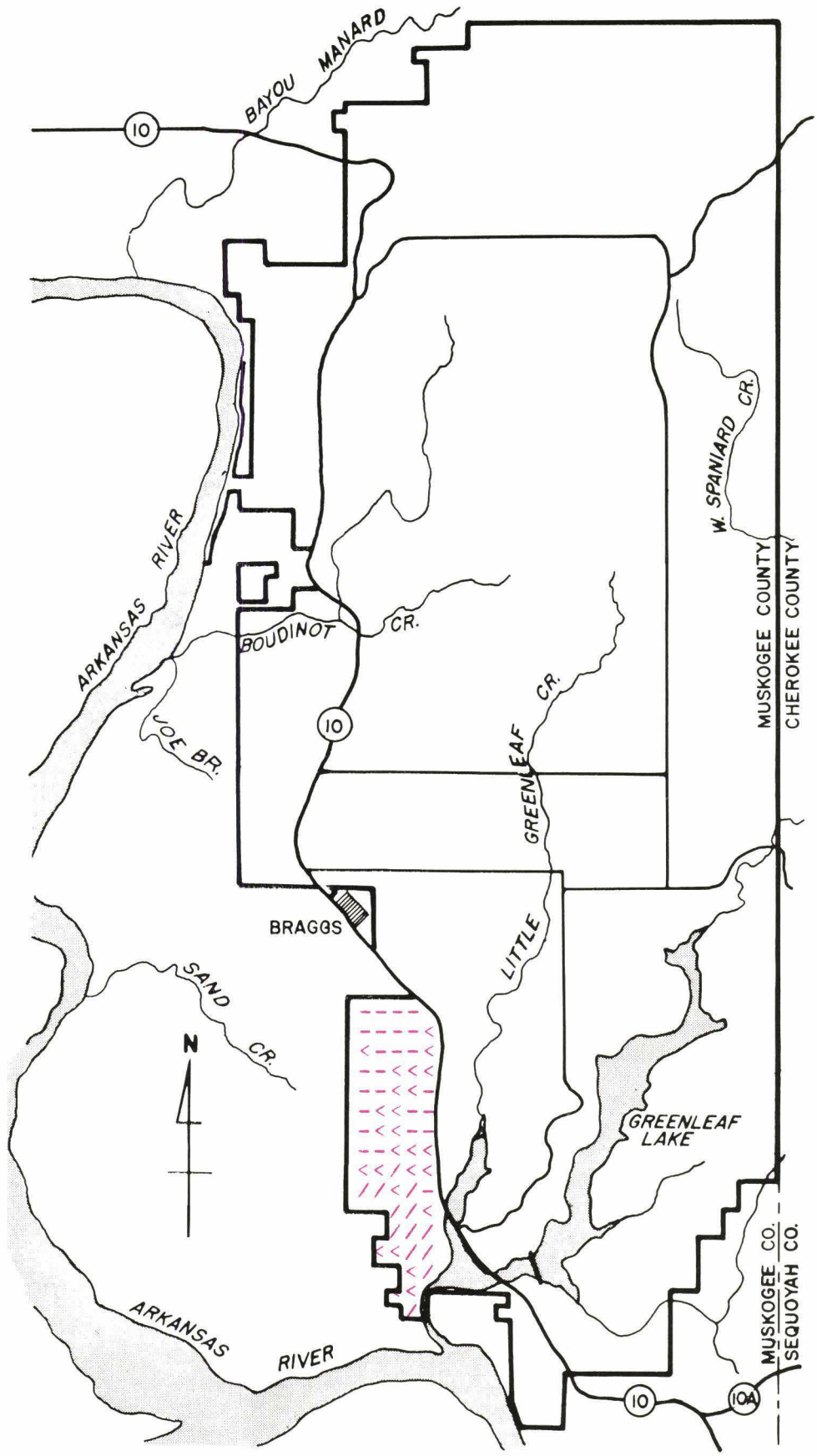
Moderate Limitations XX

Severe Limitations ▮▮

SITE 3
EXPANDED

ANALYSIS OF SLOPE CLASS

1. This area is 1175 acres in size.
2. 459 Acres have 0-2% Slope class.
3. 477 Acres have 3-5% Slope class.
4. 55 Acres have 6% and over.



LEGEND

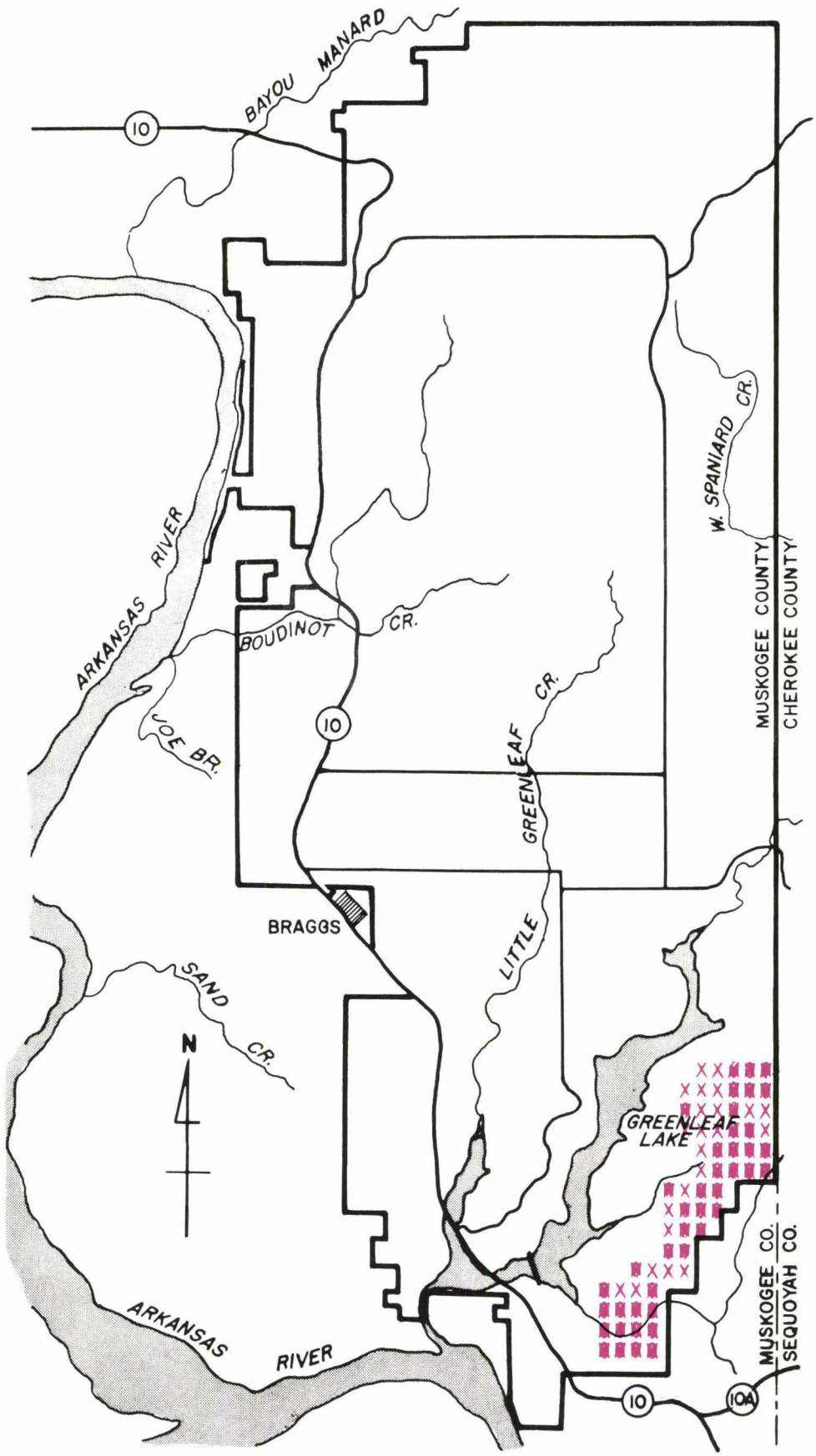
	SYMBOL
1. 0-2% Slope class	--
2. 3-5% Slope class	<<
3. 6% and up	//

SITE 4

SOILS ANALYSIS

To determine degree of limitations for light industry.

422 Acres have moderate to severe soil limitations for light industry. The remainder has severe limitations.



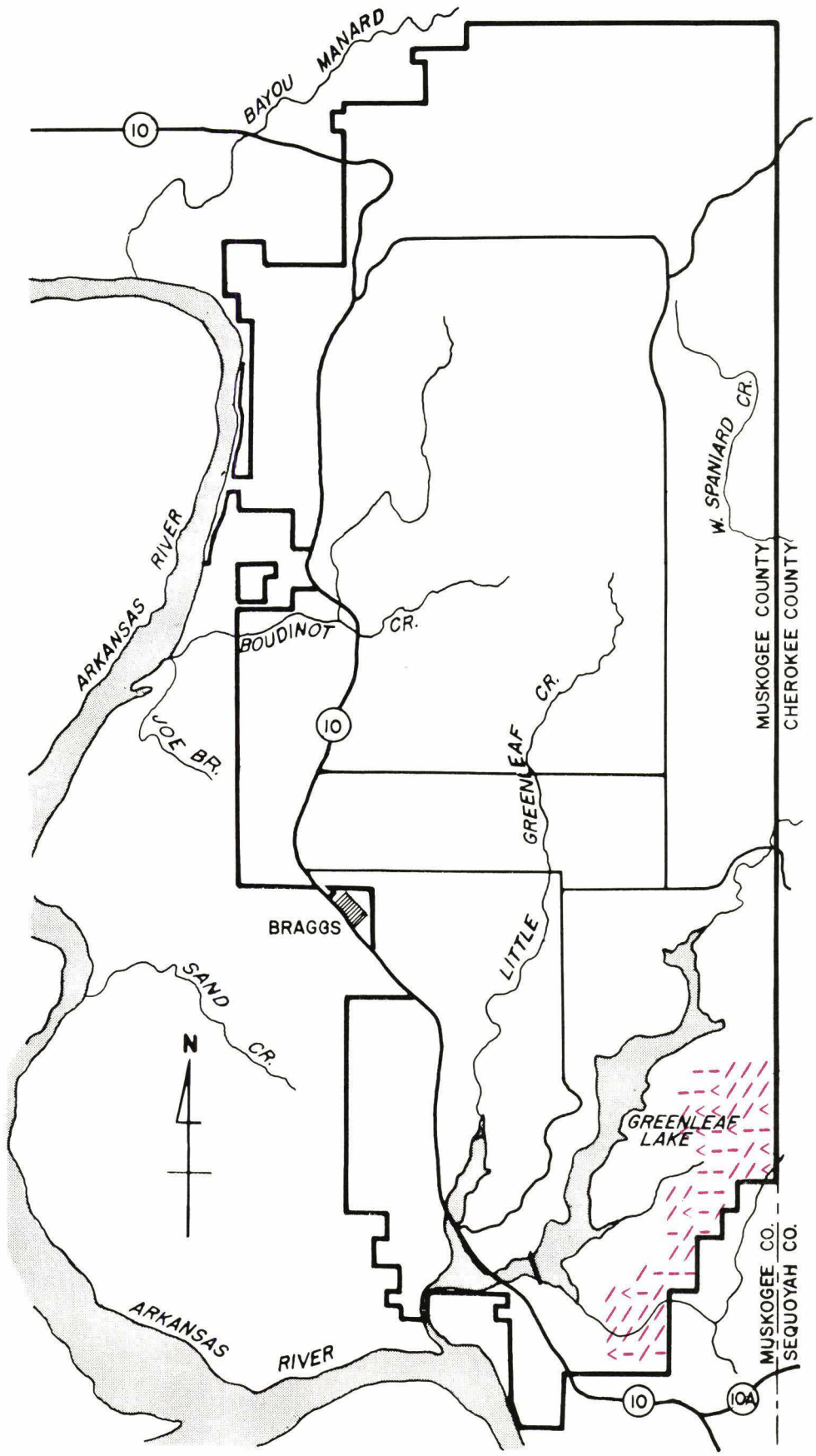
LEGEND

	SYMBOL
Moderate to Severe	XX
Severe	■■

SITE 4

ANALYSIS OF SLOPE CLASS

1. This area is 1200 Acres in size.
2. 404 Acres are in the 0-2% slope class, 239 Acres in the 3-5% slope class and 349 Acres 6% and over.



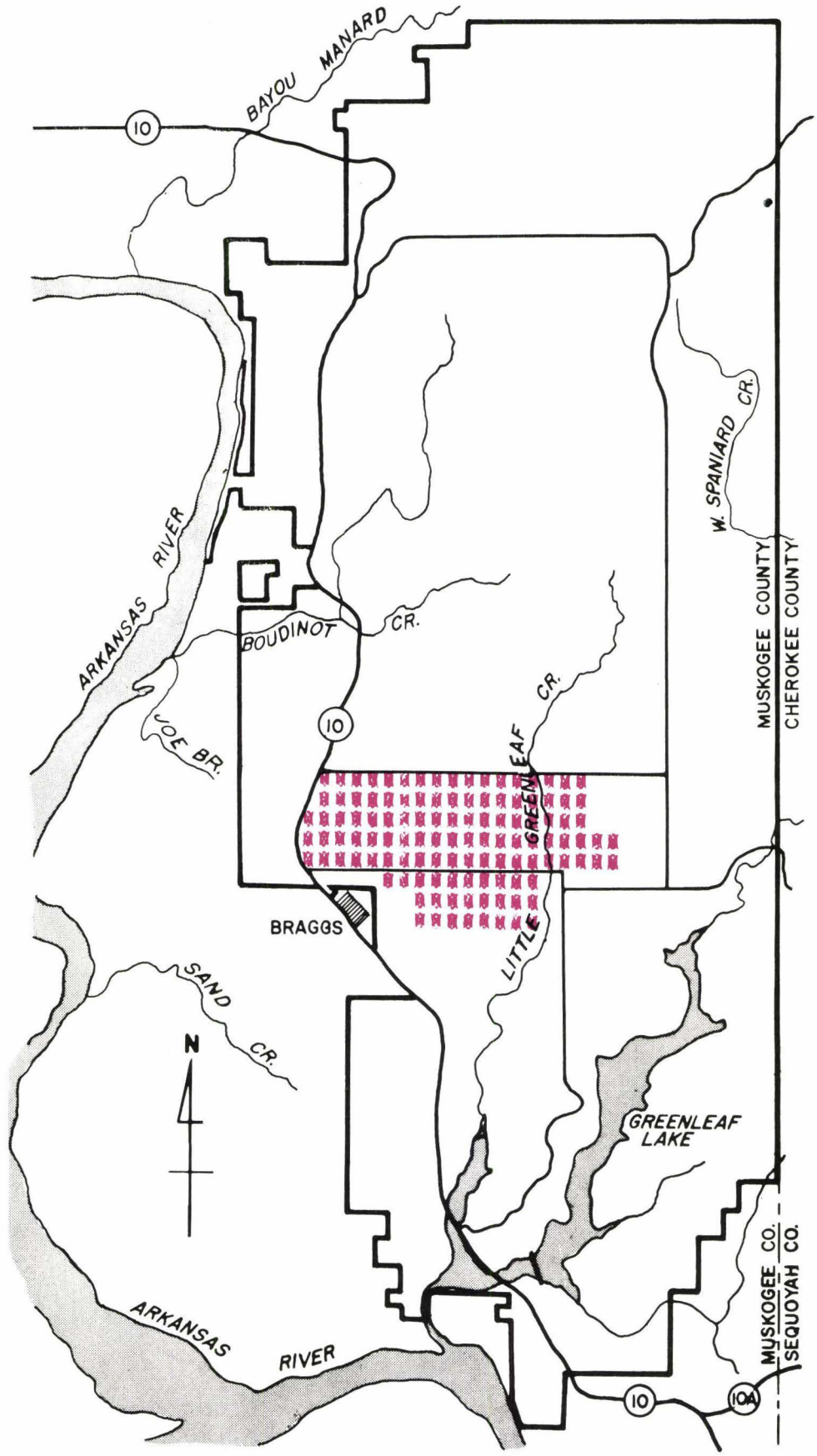
LEGEND	SYMBOL
1. 0-2% Slope Class	--
2. 3-5% Slope Class	<<
3. 6% and Over	//

SITE 5

SOILS ANALYSIS

To determine degree of limitations for light industry.

All soils on the 2166 Acres of this area have severe limitations for light industry.



LEGEND

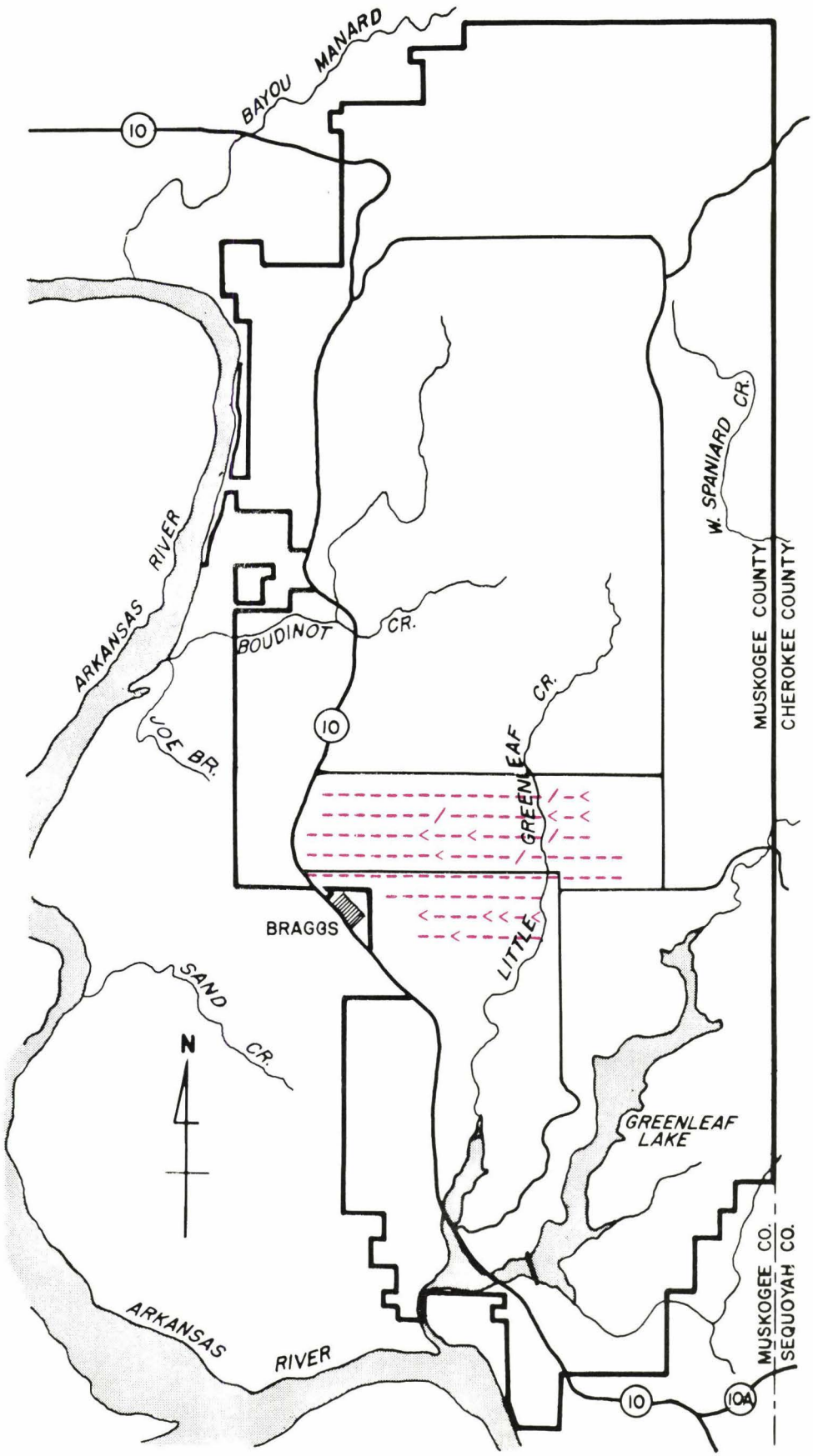
SYMBOL

Severe Limitations

SITE 5

ANALYSIS OF SLOPE CLASS

1. The area selected is characterized by having many streets and building foundations. It is 2166 Acres in size.
2. 1891 Acres are in the 0-2% slope class or 87% of the area.
3. 202 Acres are in the 3-5% slope class.
4. 73 Acres have slopes 6% and over.



LEGEND	SYMBOL
1. 0-2% Slope class	--
2. 3-5% Slope class	<<
3. 6% and up	//